

The Iron Age

A Review of the Hardware, Iron and Metal Trades.

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Thompson's Pulverizing and Sifting Mill.

One of the novelties in machinery exhibited during the recent Kilburn Show was Thompson's Centrifugal Pulverizing and Sifting Mill, manufactured by the Pulsonator Engineering Company, of London. The *Engineer* gives the following description of the apparatus:

The accompanying engraving of the comminutor, as it has been named by the manufacturers, shows the arrangement of the mill exhibited, the periphery of which is 20 inches in diameter, but a smaller mill, 10 inches in diameter, was also shown and in motion. In our illustration A is a chilled iron ball 5 inches in diameter, driven by two drivers or disks, B B, which are placed on a spindle C, and are set up by nuts and india-rubber washers, so as to give an elastic grip in the ball. The disks B B are bell-mouthed, having bevel driving faces D D, and fan blades E E. The ball A is confined within an annular chilled iron path F F, 20 inches in diameter, which is provided with the hopper G. This path or ring is carried in a suspension frame H, which has two hollow-necked trunnions through which the spindle C passes. A wheel I, having placed within its rim the elevator buckets K K, revolves on one of the trunnions of H. An external hopper L, which is shaken from the end of the spindle, delivers into these buckets through the arms of the wheel I. An internal geared spur wheel M is placed on the trunnion of H, opposite the elevator wheel between the two wheels, which are stayed together. Surrounding the mill is placed a revolving cylindrical sieve N of any desired mesh, which is provided with a longitudinal elevator bucket O, the width of the sieve.

The driving pulleys P P are placed on the end of the spindle, and from the spindle motion is communicated by the small pulleys Q, R, S, T and the pinion W to the spur wheel M. The mill is carried on a cast-iron box standard, V V, and is covered in by a wood and iron casing, W. The mode of working is as follows: The spindle, when rotating, carries with it the disk and the ball, for, though the disks cannot hold the ball when still, they tend to assume a position normal to their axis directly they revolve, and they then pinch the ball more or less and carry it with them. The material to be pulverized is placed in the exterior hopper, whence it drops into the annular elevator and is discharged into the internal hopper. The substance, falling thence into the mill through double apertures, is first crushed by the rapid blows of the ball, which freely exerts its centrifugal or tangential force upon the substance under treatment, and by means of a simple rolling motion, kept up by the elastic-pressed disks or drivers, it becomes rapidly pulverized, and

naturally vary. The advantages claimed for the mill are: 1. That the excessive speed and the attendant evils are avoided. 2. Power is economically employed. The action of the mill is almost similar to a pestle and mortar in its treatment of the material; the heavy parts, which are chilled, are very small and easily renewed. 3. The material is ground and sifted at one operation, and this is effected without having to repass the material through it, as with any other machine. Directly any of the stuff is suffi-

SCIENTIFIC AND TECHNICAL.

A German journal, *Fortschritt der Zeit*, speaks of

A NEW APPLICATION OF PAPER,

which was accidentally discovered some time ago at the Portsmouth dry dock. A vessel was hauled up for repairs, and it was observed that a portion of the hull to which a piece of paper adhered was free from grass and mussels. Experiments were instituted

Hazard, finds, however, that if the plate, after careful desiccating, is coated with collodion and then varnished, it will resist moisture well.

Prof. Forbes, before the recent meeting of the British Association, reported that the committee in charge had constructed two

INSTRUMENTS FOR DETECTING FIRE-DAMP, the principle in the construction being founded upon the fact that sound traveled quicker in light gases than in dense ones,

acid, 1.7 parts of borax and 2 parts of starch in 100 parts of water. For cordage, canvas, wood or straw, they use 6 parts of boracic acid, 15 parts of sal ammoniac and 3 parts of borax in 100 parts of water; while for paper the mixture is 8 parts of sulphate of ammonia, 3 parts of boracic acid and 1.7 parts of borax. The latter solution is applied at a temperature of 122 degrees, and all are, it is said, peculiarly effective in preventing combustion.

Numerous methods for the rapid reproduction of letters, drawings, &c., are claiming attention. We have repeatedly called attention to those brought out in France, Germany, &c., and complete our list with the latest,

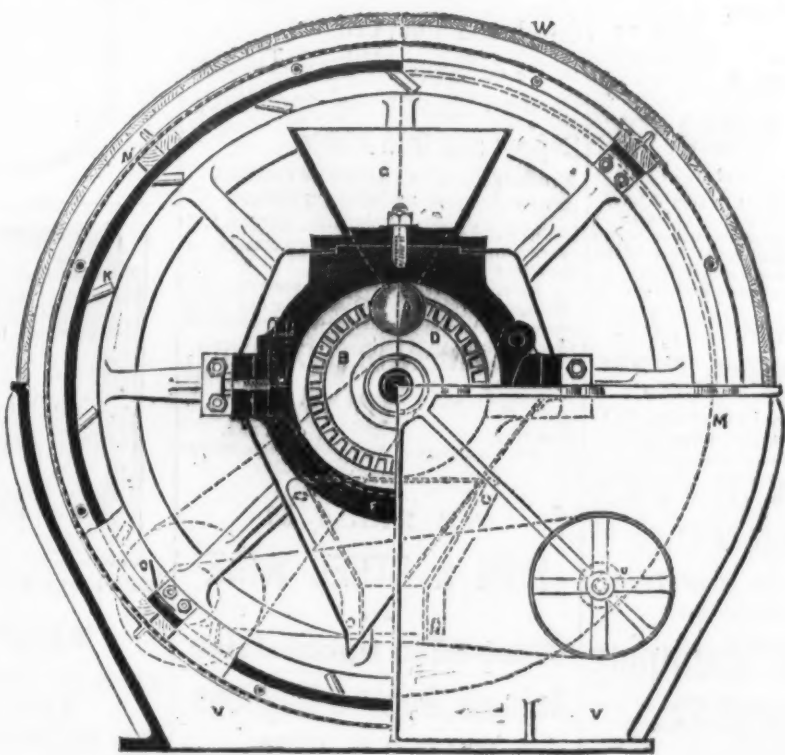
THE POLYGRAPH,

which is made as follows: A plastic mixture, composed of 500 parts (by weight) of white gelatine, 500 parts of glycerine, 50 parts of glucose, 50 parts of white glue and 350 parts of water, is poured hot into a shallow tin box of suitable size. The ink used for writing or drawing is made by adding to a suitable quantity of water 20 grams of violet aniline and 300 drops of alcohol. The ink is allowed to dry on the paper, which may be of any ordinary quality, and then the written side is laid on the plastic paste and is gently pressed on with the hand. After waiting for a minute the paper is neatly raised, and the writing will be found to have been transferred to the surface of the paste. From this as much as 50 copies can be taken without the aid of the press. What is left of the ink is carefully washed off by means of a warm sponge.

In the *Chemiker Zeitg.*, Herr Hardung gives some details on the

MANGANESE COPPER,

an alloy made at Isabellenhuetto, near Dillenburg, Germany, where an alloy consisting of 70 per cent. of copper and 30 per cent. of manganese is produced. It is used as an addition to brass, bronze, &c., for increasing the density, tensile strength and ductility of the metal, as the formation of oxides of tin or copper, which impair the physical properties of the material, is prevented by the great ease with which manganese is oxidized. Metallic manganese is also made for the same purpose, and our authority states that an addition of $\frac{1}{4}$ to 1 per cent. of manganese and of $\frac{1}{4}$ to 3 per cent. of the manganese-copper alloy will insure a solid casting. Larger amounts of manganese—for instance, 2.5 to 6 per cent.—make the metal particularly hard, and it is stated that bronze can be made in this manner to assume the hardness of steel. The following alloy is said to be excellent for metal for bearings: 80 parts of copper, 9 of manganese-copper alloy, 6 of tin and 5 parts of zinc. This confirms the experience of English investigators with manganese bronze,



Side View.

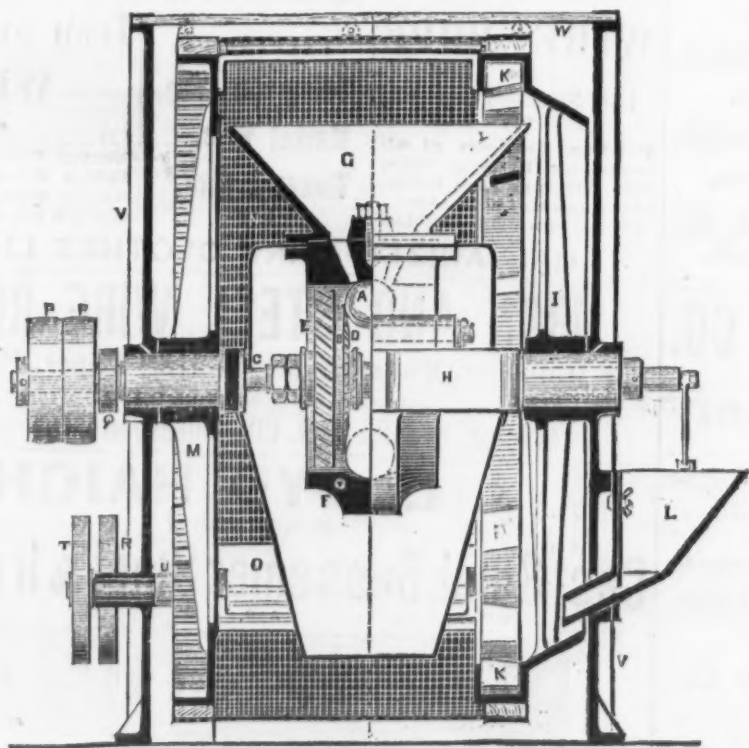
ciently fine to pass the required mesh it is delivered out of the machine. 4. The machine is inclosed and prevents the escape of fine particles.

Weights and Measures for Canada.—The regulations respecting the description of weights, measures, balances and weighing machines that will be admitted to verifica-

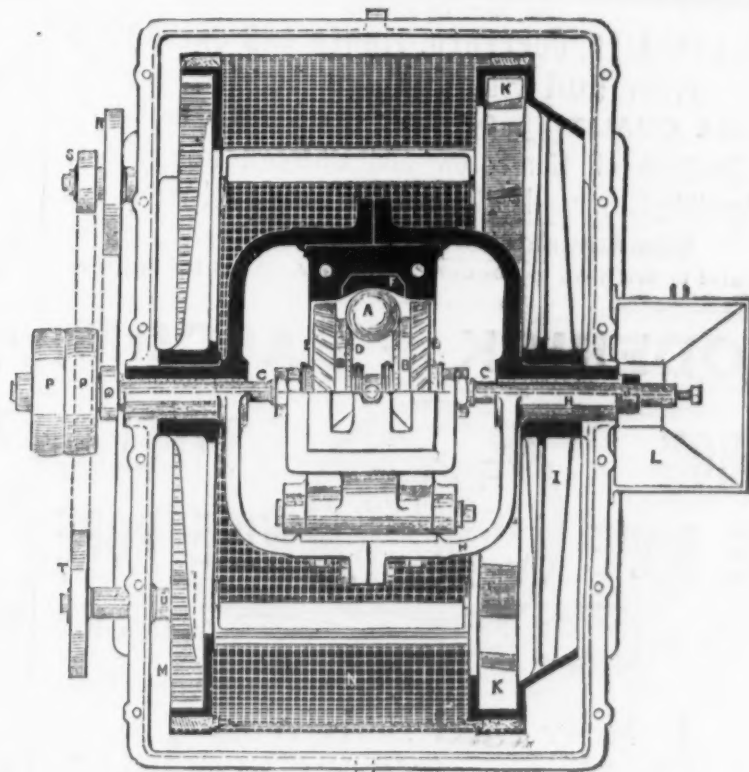
tion under the Weights and Measures Act, are published in the *Canada Gazette*. The following balances are to be admitted to verification. 1. Balances having equal arms, and on which the load is suspended below the fulcrums. 2. Balances commonly known as steel yards, or Roman balances, having unequal arms. 3. Weights, ridges. 4. Balances with equal arms, and on which the load is placed above the fulcrums. The spring balances, which are largely used in these provinces, will now, we suppose, have to be discarded. Although convenient, they can certainly not be called perfect, and it is as well they should go out of use.

Very important improvements have been made within the last year by the *PROGRESS IN PHOTOGRAPHY*, collodion being superseded by gelatin. The

and that air which was contaminated with fire-damp was lighter than pure air. The committee further stated that they had tested the instrument in Wharfedale Silkstone Colliery, and found that it registered the presence of fire-damp with more readiness than any other, although the greatest quantity found was only 6 per cent., or 12 times the smallest quantity which Forbes'



Vertical Section.



Plan.

THOMPSON'S PULVERIZING AND SIFTING MILL.

is then, through the fans of each disk, raised out of the mill, and, falling down through the shoot into the rotating sieve, that part which is already crushed sufficiently finely passes through the sieve and out of the machine, while the remainder, or coarse portion, is caught up by a longitudinal collector and thrown again into the internal hopper to be reground. The 20-inch mill, which was exhibited in motion, is calculated to grind about 8 cwt. to 9 cwt. of coprolites to pass through a 50 mesh sieve per hour, with about 3-horse power, and runs at about 450 revolutions per minute; for other substance this output will

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plates are covered with a layer of bromide of silver held in suspension in gelatine. Great care is necessary in preparing the mixture of gelatine and bromide, and in preserving it from the action of light. The time of exposure is reduced from ten and fifteen to a few seconds. The development must not be made with the use of too much light, so that the picture is slow in coming out. The new process is remarkable for the sensitiveness with which it gives details, and with which shadows and half tones are brought out. One great trouble with these gelatine negatives has been that they suffer very easily from moisture. Mr. J. S.

indicator was able to detect. Some alterations were recommended in the instrument, and the committee added an opinion that it would be very useful in ensuring the safety of mines.

Messrs. Martin and Tossier, of Paris, propose to make

FABRICS AND PAPER FIRE-PROOF

by applying certain solutions, the composition of which varies according to the material to be treated. For all fabrics generally they use a solution containing 8 parts, by weight, of sulphate of ammonia, 2½ parts of carbonate of ammonia, 3 parts of boracic

and there can be no doubt that manganese has the same effect as phosphorus in counteracting the formation of oxides and sub-oxides. Whether its action is as intense and as practically valuable remains to be seen.

According to the detailed statistics published by Mr. Hunt, the production of coal in Great Britain was, for 1878, 132,607,866 tons, hauled from 3768 collieries. The corresponding figures for 1877 were 134,610,763 tons and 3770 works, while in 1876 there were 4002 collieries producing 133,344,266 tons of coal.

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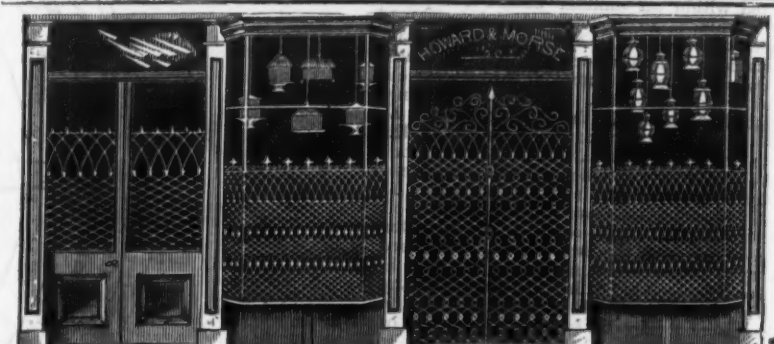
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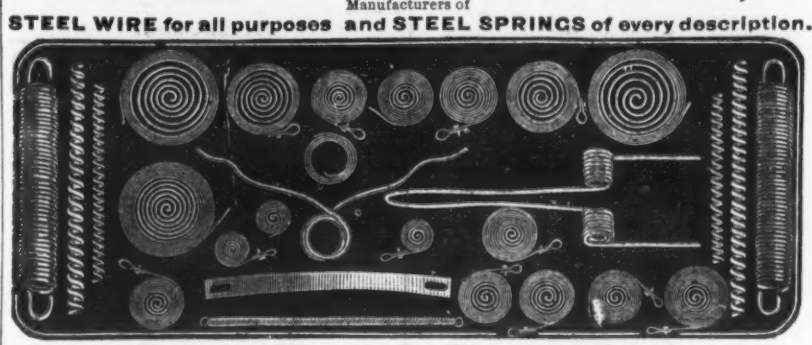
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The Fire Risk of Steam Heating.

Mr. William B. Whiting, secretary of the Manufacturers' Mutual Insurance Company, of Boston, gives the following information on this subject, as shown by the records of the underwriters:

Steam heating has now, for manufacturing, become almost universal, and has so many advantages over stoves in cleanliness, saving of valuable space, and the softness from slight escapes of the steam, that it is beyond question the most desirable mode of heating such buildings, if safety can also be secured. We recognize the fact, that to the common mind it is perfectly secure, and that talking to the average workman or workwoman of danger of fire from a pipe containing only hot water is labor in vain; and that is also, to a certain extent, true of the overseers and even of the superintendents of many mills. The fact that fire can, by any possibility, be set by steam-pipes, is openly denied by many men of intelligence, as the writer has learned from contact with such men during the past 15 years. Many persons, however, have seen wood, which, by long contact with steam-pipes, has been converted into charcoal; and yet but few can be convinced that fire ever follows such charring. Perhaps no such firing has ever been actually seen to take place; but we are in possession of indubitable evidence, that, seen or unseen, it does take place, the burnt wood being in our hands, with unquestionable traces of burning, not merely charring, thereon. Precisely how the firing takes place we do not undertake to say, whether by simple contact, as a red-hot iron would fire any combustible, or by chemical action induced by the heat. This is a question for the scientist, and one, perhaps, not yet fully understood; and we are content to leave the subject with the chemist, satisfied with the present purpose to know, that, by whatever process the fire may be produced, it is produced, and is an active element of danger in all buildings where steam is used for heating or drying, or for any purpose. In manufacturing establishments we usually find very little care taken to prevent contact of steam-pipes with combustibles, especially in such as have been built for a considerable time. In those more recently constructed it is usual to leave spaces around the pipes where they pass through floors, partitions, &c.; and, in some cases, thick thimbles of cast iron are introduced, which, perhaps, to a considerable extent remove the danger; but, were soapstone or plaster-of-Paris thimbles substituted, the work would be more perfectly done. After this provision for safety has been made, nothing further seems to be considered necessary; and the pipes are ranged along the walls, under the windows, in a very convenient position to receive and hold the brooms, brushes, speeder and spinning-bobbin, wash-rags, towels, old shoes, bunches of wiping-waste, &c.; and the operatives do not fail usually to improve the opportunity offered them of using the pipes for all such purposes, modified just in proportion to the taste for neatness in the overseer or agent of the concern. In some properties nothing of this is seen whatever; but the majority are open to charges of neglect, and many are decidedly slovenly. Articles hung upon the walls, or garments lying in the window-stools, are frequently left in contact with the pipes below them; and fires have been known to have originated in this manner.

It may not be necessary to urge further the reality of danger from steam-pipes, but proceed to the consideration of a remedy for an admitted hazard. We propose, as the only proper and sensible method, that the heating-pipes be raised up to the top of the rooms, or at least 6 to 8 feet from the floors, thus removing them from the alleys, sometimes quite narrow, and gaining room thereby, which will allow the boxes for roving, bobbins, waste, &c., and the overseers' benches, and the wardrobes, to be pushed back solid against the walls; and in cases where the alleys are very narrow, and the operatives have been subject to burn themselves against the pipes, this evil will be removed.

The pipes already in may, by increasing the length of the feeders, be raised bodily, remaining relatively to the walls in the same position they have heretofore occupied—one pipe over another; or, if it be preferred, the coil may occupy a horizontal position, suspended on suitable hangers or brackets. Thus far we find no difficulty; but to convince those interested that they can heat a room as rapidly, as cheaply, and as comfortably, by pipes suspended near the ceiling as when near the floor, is a task, perhaps, too great for us.

We are met at once, whenever this subject is broached to one who has never seen a trial of it, by the truism that "heat rises." This is, of course, admitted; and when a pipe on the wall near the floor has steam admitted to it, and the surrounding air becomes heated, it rises at once to the top of the room; and if it did not come down again, the condition of the center of the rooms at the floor in a 90-foot mill would be anything but comfortable with the mercury at zero. The fact that no one complains of a proper distribution of heat in one of these wide rooms is a sufficient answer to the usual objection, "heat rises." It does rise; and it falls also, and moves all over the room, and that whether the room be 40 feet or 90 feet in width. When a pipe becomes hot by the steam, the air surrounding it also becomes warm, and as heat rises, is set in motion from the pipe; upward at first, but probably outward from the hot surface in nearly all directions; the colder air moves inward toward the partial vacuum, and these currents transmit the heat in every direction, until the whole room has felt its effects. The question is whether, if the pipe be located near the top of the room, instead of near the bottom, the same result is obtained, and as quickly and economically. An answer to this question, to be of value, must be the result of experiment. No more theory will convince any one.

Some 14 years since the writer induced the owner of a woolen mill at Rockville, Conn., to change the heating pipes in an upper room of his mill (used chiefly for drying wool upon the floor) to a point near the top of the room, as a matter of safety alone, not having the question of heating the room

in mind at the time. This change was made, and on a subsequent visit it was noticed that this change had been made throughout the mill. This was a surprise, and led to a questioning of the owner as to results. He was asked if the rooms were as well and economically heated as before, and his answer was in the affirmative. He was asked if any complaint was made by the people of undue heat on their heads, and the answer was a negative. He said that on inquiry upon this point of the overseers, they told him that in some cases the rooms were found hot overhead when they first entered in the morning, but that, as soon as the shafting and belts were put in motion, all this feeling of heat disappeared. Since that time several manufacturers have adopted the plan partially or wholly, and with satisfactory results as to heating, and, of course, with advantage in getting the pipes up out of the way. Among these are the Messrs. Cheney Brothers, silk manufacturers, who have adopted the plan both at Hartford and South Manchester, and the Rock Manufacturing Company, Rockville, Conn., C. Fitton agent, who have changed their entire establishment, containing 21 sets of casimere machinery, except one or two coils in the repair shop.

The following information is furnished by Mr. Atkinson as to his own observation, and also in reply to a request for information made to an English cotton spinner of wide reputation:

"In connection with your statement in respect to the right position for steam pipes for heating, my observation in England, since confirmed by correspondence, is to the effect that such pipes are there almost universally hung from the ceiling. In answer to a letter of inquiry, written since the subject was broached in this office, I have received the following communication from one of the largest spinners in Manchester: "In reply to your inquiries about the position of pipes used for heating mills, I have spoken to several machinists and mill-valuers, and all the information I can get is that almost universally the steam pipes are hung from the ceiling, on account of the advantages of having them out of the way, and also because in a large room the heat can be more generally diffused than would be if the pipes were placed only against the walls."

"I suspect that the point of importance attached to your inquiry is not so much one of economy of fuel—though I won't forget this—but rather of efficient ventilation, as affecting the health of workers, and giving the desired temperature needed for good spinning."

"My present conviction is that the ventilation of mills should be by down drafts, because the dirt and impurities driven off the machines would then be removed before they could reach the mouths of the workers. This would surely be the case with most machines in a cotton mill, as they are generally below the level of the mouths of the workers. (As I write, a doubt has come into my mind as to whether this is so with children.)"

"Tobin's system of ventilation is much used for houses, but whether for mills I don't know. This system is that a pipe should be brought from the outside, through the wall, near the floor, and taken upward into the room, say for about three-fourths of the height from the floor to the ceiling. By this arrangement the indraft of air strikes against the ceiling, and is diffused equally, in a level stratum, over the whole surface of the ceiling, and comes down to escape by the doors or fire-places, or other openings."

This testimony all seems to point one way, and to sustain us in our views as to the location of heating pipes; and although the number in this country who have experimented is small, their intelligence and standing is unimpeachable. If, as we are informed, the plan of overhead pipes is in England almost universal, it seems that our manufacturers ought to give the proposition a fair consideration. If any one be now engaged in building, we would urge him to examine the plan; and if any having crowded rooms could be induced to change his pipes, we feel sure that he would thereby make his property safer and more comfortable."

[Note.—The foregoing seems to us to be all wrong, theoretically and practically, so far as regards the propriety of suspending steam pipes from the ceiling for any other reason than convenience in having them out of the way. In our judgment, the proper method of warming a large mill, or church, or public place of any kind, is to warm the floors. When this is done, no other heating by direct or indirect radiation is needed, good ventilation is easily secured, the health and comfort of occupants promoted, and the headaches and drowsiness resulting from hot heads and cold feet avoided. The fire risk, incident to the method of disposing of steam pipes now usually employed, can be as well, or better, avoided by carrying them through fire-proof channels under the floors in such a way that contact with wood-work is wholly guarded against. This system will heat a mill or public building comfortably at very much less cost for fuel than is usually considered necessary, for the reason that, with warm feet, a person remains entirely comfortable in a temperature which under other circumstances would seem chilly.—Editor The Iron Age.]

Railway Accidents in England During 1878.—The total number of persons returned to the Board of Trade as having been killed in the working of the railways in England during the year 1878 was 1053, and the number of injured 4007. Of these, 125 persons killed and 1752 persons injured were passengers. Of the remainder, 544 killed and 2003 injured were officers or servants of the railway companies, or of contractors; and 384 killed and 252 injured were trespassers and suicides, and other persons who met with accidents at level crossings or from miscellaneous causes. Of the passengers, according to the returns made to the Board of Trade, 24 were killed and 1173 were injured from accidents to trains. In addition to the above, the companies have returned 59 persons killed and 2050 injured from accidents which occurred on their premises, but in which the movement of vehicles was not concerned, and which, consequently, cannot be considered as "railway accidents."

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ALLENTOWN ROLLING MILL COMPANY,
Manufacturers of
Rails, Bars, Axles, Shafting, Fish Bars (Plain and Angle), Spikes,
Rivets, Bolts and Nuts, &c. Bridges and Turn Tables.
General Office, 303 Walnut St., Philadelphia. Works at Allentown, Pa.

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Analytical and Consulting Chemists,
919 and 921 Chant St. (10th St. above Chestnut St.), PHILADELPHIA, PA.
Established in 1836.
Analyses of Ores, Waters, Metals and Alloys of all kinds. A special department for the
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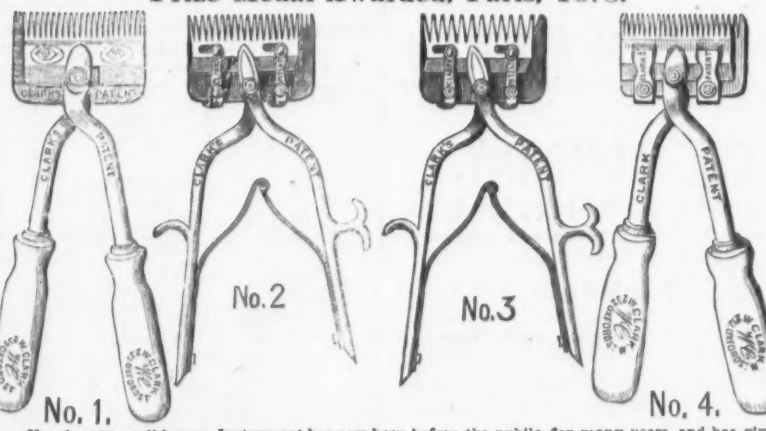
Chester Iron Company's
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No. 1.—This well-known Instrument has now been before the public for many years, and has given
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consequent liability of accident to the man and also to the machine itself. No. 4.—A TWO-HANDED INSTRUMENT, with the patent grasshopper springs over the plates.
This improvement renders the machine simply perfect, producing a softness and ease of motion not to be sur-
passed, whilst by the peculiar and continuous self-acting pressure of the spring the two plates are kept in
cutting contact, and the machine requires no further adjustment whatever. These springs are also applied to
Nos. 2 and 3. N. B.—No Stable should be without this set of incomparable instruments. See that all
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See first issue of *The Iron Age* each month for
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Iron.
RAILROAD IRON
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STREET RAILS OF ALL PATTERNS,
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Special sections made if required.
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CHARGES TO IRON WORKS.

For determining the per cent. of Pure Iron in an ordinary Ore.....	\$4.00
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The War of the Telephones.

One of the most interesting patent litigation ever witnessed in this country is now imminent, growing out of the conflicting claims of rival inventors and patentees to the ownership of the telephone. Already nearly a hundred patents embodying supposed improvements in telephones have been issued, and more than a dozen interference suits are now pending before the Patent Office, brought in the names of as many patentees.

The general public knows only of the business rivalry between the Bell Telephone Company, on the one hand, and the Western Union Company, owning the Edison patents, on the other; but before the courts and the Patent Office the controversy takes a character entirely different. The merits of the case are very difficult to reach, and seem not to be fully understood even by experts in electricity or patent law. So many fine points in electrical science and in patent law, the most evasive and crooked of all matters that one becomes involved from the outset in a labyrinth of technicalities so dense that a just and intelligible solution seems to be an impossibility. The interference cases are set for a hearing some time next February, and the time meanwhile is being taken advantage of by the counsel to take testimony bearing upon the cases.

Stripped of side issues, the immediate controversy appears to be narrowed down to the question of priority in the application of the principle of the undulatory current to the transmission of spoken words. Several years before the issuance of the first American telephonic patent, a German named Reis experimented in telephones, and is said to have succeeded in transmitting musical tones and vowel sounds by wire. Reis published an account of his experiments, with plans, an examination of which in the light of to-day makes one marvel that success should have eluded him. He made use of the same diaphragm which forms a part of all successful telephonic systems.

In July of 1875, Elisha Gray, of Chicago, obtained a patent upon a system of transmitting musical sounds, which it was thought at the time would form the basis of a system of multiplex telegraphy. Each note in the scale was to be made the medium of communication between different points. The principle is said to be theoretically perfect. Gray's patent was reissued on the 28th of January, 1879, and forms the foundation of the counter claim of the Western Union against the Bell Telephone Company.

Prof. Bell's patent, the application for which was filed on the 14th of February, 1876, is based upon the employment of undulatory currents of electricity. The electrical current is never absolutely broken, but effects are produced by a variation in the strength of the current put upon the wire. This principle is a necessary part of every successful telephonic system, and by its means every variation in the volume of the human voice may be made to produce corresponding variations in the magnetic effects transmitted from point to point by telephone. Prof. Bell made no claim to the discovery of the undulatory current principle, but merely to its application in the manner set forth in his application. The claim of the Western Union is that the principle of the undulatory current was covered in the Gray patent. The settlement of this question will probably be only the first in the contest, however, which involves many other points.

The Tube Trade in England and the German Tariff.

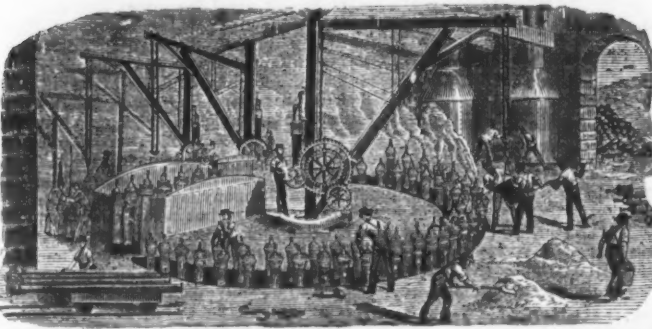
The London Engineer says: The gas tube trade has been one of the earliest British industries to feel the prejudicial effect of the increased German tariff, to which we lately drew attention. Germany has long been one of the best customers of the wrought-iron tube maker, both in England and Scotland. The orders have been for heavy quantities, and they have come forward with striking regularity; the monthly orders from the leading markets of the Zollverein have largely contributed to the activity of the British tube mills. An order embracing tubes of the value of £3000, even at present reduced prices, has been by no means an exceptional one. On the contrary, such an order might be looked for by leading firms with tolerable confidence monthly during the busy part of the year. All this, we fear, is now to suffer a very unsatisfactory change. We have information that immediately upon the coming into operation of the new tariff, its existence became known to one of the chief establishments for wrought-iron steam and gas tube making in this country, by the receipt of a telegram desiring that an order of the value we have just indicated should not be executed. The countermand came close upon the heels of the post letter which inclosed the order. A subsequent explanation from the customer showed that the duty of 50 per ton, which is now levied upon British tubes, would prevent the continuance of the business hitherto conducted, and that the imposition of the duty was the sole reason of the countermand. The withdrawal of even one order of 200 tons of tubes in a month is not a light matter to any tube-making firm. But when such an order embraces only part of the requirements of a market amenable to the influences which have induced its suppression, then the significance of the cause is great. And it happens that there are English firms who number nearly a dozen good tube buyers in the German market. These buyers our manufacturers believe they have lost so long as the tariff remains in operation. Previously the Germans had so far increased their tube-making capabilities that the trade, though valuable still, had nevertheless begun to fall off. Indeed, it is notorious that both German and Belgian firms have lately been securing orders from even London gas companies. Nor have the locomotive tube makers of Germany been less determined in their assault on the English center of that industry. One English railway company is known to have agreed with certain German producers for a twelve-month's supply. So high a tariff as £2.10/ cannot, therefore, have been at all called for in the interest of German manufactures, if it was not intended wholly to cut off the importation.

COBB & DREW,
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Manufacturers of Copper, Brass, and Iron Rivets: Com-
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Tacks: Finishing Hangers, Trunk Cloat and Glass
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George C. Grundy,
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General Foundry Work.

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FOR WATER AND GAS.

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BEST REFINED TOOL CAST STEEL
For Edge and Turning Tools, Taps, Dies, Drills, Patches, Shear-Knives,
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SAW PLATES
For Circular, Mulay, Mill, Gang, Drag, Pit and Cross-Cut Saws.

Sheet Steel
For Springs, Billet Web and Hand Saws, Shovels, Cotton Gin Saws,
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SIEMENS-MARTIN (Open-Hearth) PLATE STEEL
For Boilers, Fire-Boxes, Smoke Stacks, Tanks, &c.

All our Plate and Sheet Steel being rolled by a Patented Improvement is unequalled for surface finish and exactness of gauge.

ROUND MACHINERY CAST STEEL
For Shafting, Spindles, Rollers, &c., &c.

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Cast and German Spring and Flow Steel.

"Iron Center" Cast Flow Steel. Finished Rolling Plow Coulters with Patent Screw
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"Soft Steel Center" Cast Flow Steel. Agricultural Steel cut to any pattern desired.
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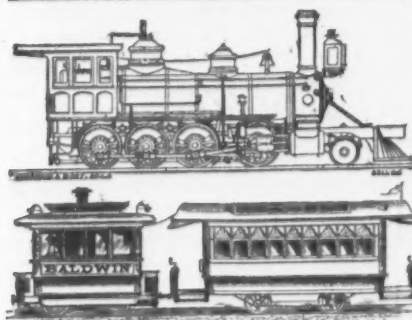
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CHILLED RAILROAD WHEELS

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Forgings for Piston Rods, Guide Bars, Wrist Pins and Machinery Purposes.
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Having extensive machine shop connected with foundry, we are enabled to fit up all kinds of light Hardware or patented articles. Correspondence solicited.

IRON AND STEEL DROP FORGINGS

All shapes, small and large, including
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Castings of Best Quality made to order at short notice.

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Galvanized and Black Sheet Iron.
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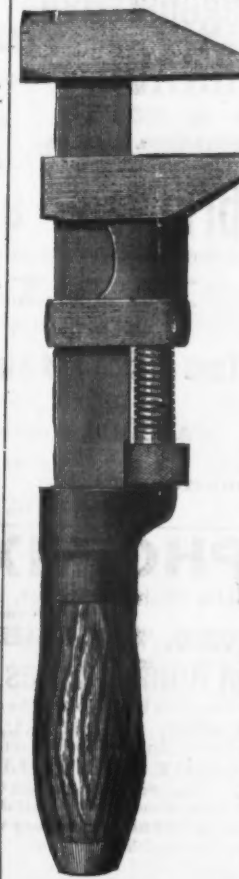
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MY NEW DOOR BOLT,

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ROBERT B. IVES, Sole Manufacturer, Fair Haven, Conn.

STANDARD GIRARD WRENCH.

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STRENGTH
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IT HAS
NO SUPERIOR.

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Wrought Bar, Head and Screw.

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Our Wrench having been imitated by other manufacturers, we have adopted the above Trade Mark, and will hereafter stamp all our goods.

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Manufacturers of

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ROLLS,

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Ore and Clay Pulverizers, Rotary Squeezers, Haskin's Patent Double Spiral Finions, and Rolling Mill Castings of every description.

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Bridgewater Iron Co.,
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Manufacturers of
SEAMLESS DRAWN
COPPER AND BRASS TUBES,
TACK PLATES,
Forgings of every description.
Bridgewater Iron Co.'s
HORSE NAILS.
PRICES LIST.
Nos. 5 6 7 8 9 10
Per lb. 25¢ 28¢ 31¢ 34¢ 37¢ 40¢
Liberal discounts to the Trade.
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Coal.

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Superior to any other Light for Mining

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THE LARGEST PUMP WORKS in the WORLD
OVER 800 DIFFERENT STYLES.
Pumps, Steam Pumps, Rotary Pumps,
Centrifugal Pumps, Piston Pumps,
for Tanners, Paper Mills, Fire Purposes, suitable for
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CLOSE-TOP CISTERN PUMP, Fig. 101.



Also, HAND FIRE ENGINES.
Send for Catalogue. Address,
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W. & B. DOUGLAS,

Portable Fire Annihilator.
Fig. 279.

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The Oldest and Most Extensive Manufacturers of

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AND OTHER

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Double Compound Lever Cutting Nippers.

Our illustration represents a new invention in the way of cutting nippers, by which great cutting power is obtained in small space, without the necessity of using long handles or very short jaws. These nippers are the invention of Mr. Thomas G. Hall. They consist of a pair of jaws for cutting, held by pins passing through two side plates, and having shanks extending downward between the plates far enough to embrace the heads of the handles. The handles themselves are hinged by a couple of pins in the lower part of the side plates, and are so proportioned that they multiply the pressure in about the ratio of 9 to 1. One arm, or shank, as it might be termed, is a little longer than the other, so that, as we measure the arm, the pressure from the handles to the cutting edges is multiplied in the proportion of 1 to 12. The manufacturers say the pressure, accurately measured, is 14 to 1. This gives an enormous cutting power. With the smaller proportion of parts mentioned, a 5-inch nipper of this pattern has as much cutting power as an ordinary pattern, such as Stube's nipper would have with 15 1/4-inch handles, if of the usual proportion of handle and jaw. It will be seen on examination of the tool that if double levers are not used, and it is attempted to obtain the same multiplication of the pressure that is obtained in this tool, the amount of motion in the jaws themselves will be so small, and the cutting edges so near the pivot, that the tool will be comparatively valueless. Thus, the greatest movement of the handles that can be conveniently obtained in a 5-inch tool is about 1 1/4 inches. One-twelfth of this is 0.146, or, as nearly as possible, 1/4 of an inch. Taking the available length of handle, 4 1/4 inches, the distance from the cutting edge to the

the Isle of Man. It will also be cheaper to carry goods from Barrow-in-Furness to York and other points in the vicinity than by the way of Liverpool. The new line will be running in about a month.

A Large German Iron and Steel Works.

Next to Krupp's famous establishments, the largest German iron and steel works are those of Actien-Gesell. für Bergbau, Eisen- und Stahl-Industrie "Union," of Dortmund, an idea of the extent of which may be conveyed by the following figures:

The iron and steel works at Dortmund have three blast furnaces and 100 coking furnaces, the production of Bessemer pigs being 48,000 tons. There are also Bessemer steel works, with hammer works, a rail-rolling mill, and a tire mill, capable of producing from 60,000 to 70,000 tons of steel rails and 12,000 to 15,000 tons of tires, axles and forgings respectively; Siemens-Martin works, puddling furnaces, and iron-rolling mills, with an average production of 30,000 tons of merchant iron, &c.; bridge works, with a capacity of 10,000 tons per annum of bridges, roofs, turntables, &c.; railway switch and crossing works, with a yearly production of 600 switches, &c.; an iron foundry, producing 4000 tons of castings per annum; and wheel and axle works, with forge and turning shops, capable of sending off 3750 sets of wheels and axles for wagons, tenders, and locomotive engines per year. This will give some idea of the great extent of the Dortmund Works, but this is only one of several. At Aplerbeck they have puddling furnaces and rolling mills, capable of turning out 15,000 tons of iron merchant bars of all kinds in the year. At Horst, near Steele, on the Ruhr, the Union Company have two blast furnaces and 80 coking furnaces, with annual capacity of from 33,000 to 35,000 tons of puddled pigs per annum; puddling furnaces and rolling mills for I, angle channel iron, &c., and iron sleepers for railways; wire-rod mills; steel works with 12 Siemens-Martin furnaces. At Heinrichshütte, near Hattingen, the company own four blast furnaces and 170 coke ovens, capable of producing 72,000 tons of pig iron both for puddlers and Bessemer steel manufacturers; puddling furnaces and rolling mills, with a capacity of 18,000 tons of plates, sheets, and angle iron, from the smallest to the largest dimensions; foundry with mechanical workshops, capable of turning out from 4000 to 5000 tons of castings per year; malleable steel casting works with a capacity of about 1000 tons per annum; and lastly Bessemer steel works with two 8-ton converters. At Othfresen and Haslinghausen, there are six blast furnaces calculated to make 87,500 tons of pig iron per year. The company has 388 boilers; 289 steam engines, equal to 18,800 horse-power; 28 blowing engines for blast furnaces and Bessemer works; 23 locomotive engines; 24 portable engines; 85 steam hammers from 1 1/2 cwt. to 15 tons; 27 rolling mills; 164 puddling furnaces; 95 welding and re-heating furnaces; 468 coke ovens; 107 machine tools of all descriptions, and 15 blast furnaces. The Union Company have several collieries, producing 460,385 tons per annum; of this the Glück-auf Tiefbau turns out 331,000 tons per annum. The collieries are in the mining district of Dortmund, in the Ruhr Valley, are also the most important iron ore mines. They have also iron mines in the mining district of Bonn (sub-district of Siegen), several mines in the Hartz Mountains, in Nassau, and in Sweden, and the production of all the mines is 122,236 tons. Nearly 6000 workmen are given employment by the company.

England's Trade with America.

A Sheffield market report in one of the London journals says:

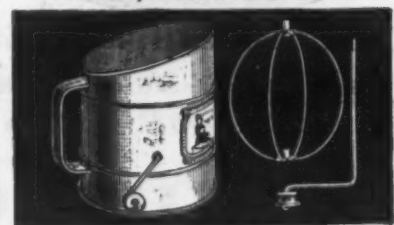
Our business with America, both inward and outward, appears to be somewhat at a standstill. There are certain goods of American manufacture that have undoubtedly got a hold upon the English market, and the demand for them is well sustained. There is that other class of articles often described as "knick-knacks" in which a large trade is also sustained; for the Americans, as is well known, are an inventive people, and before the inquiry for one novelty has had time to exhaust itself, another is introduced, so that travelers who carry them have always something new to show. There is not much that is encouraging to say with respect to our exports to America. As one manufacturer remarked, "They are trying to diminish our trade with that country in every possible way." The keenness with which some houses have felt the change that has taken place in our trade with America can scarcely be conceived. We have heard of one house that used to send out 600 gross of table knives per week, and now they do not send out a gross in six months. For a long time the Americans did little in pocket cutlery; but now we are feeling their competition in that department. Already in plain knives that can be made by machinery we cannot touch them—having regard to price and quality; but in finer grades, where quality is more considered than price, we can hold our own. There has been a little improvement in the demand for Bessemer steel, but with respect to all other goods, business is extremely quiet. There is a good deal of comment among our manufacturers as to the active efforts of American Consuls over the world put forth to push the trade of that country. Indeed, they are spoken of as "a vast body of American manufacturers' agents," and there can be no doubt that they do their work exceedingly well. They not only keep the American people well advised as to what is passing in the various business centers in all countries, not only make them acquainted with what class of goods is most in demand in different markets, but they even make personal calls upon likely people, and direct their attention to certain things that they would be able to deal in. In short, they do the work of commercial travelers under exceptionally favorable circumstances. There are these and other difficulties with which our merchants and manufacturers have to contend, and some of the best informed of them assert that our business with America will never be better until retaliation would cause the food producers to come forward and discountenance the views of the protectionists.

CUT TACKS, SHOE NAILS, WIRE NAILS,
Pat. Brads, Finishing Nails, Clout Nails, Trunk Nails, Hungarian Nails,
Cigar-Box Nails, Basket Nails, 2d and 3d Fine Nails.
Carpet Tacks, Upholsterers' Tacks, Gimp and Lace Tacks,
Brush Tacks, Copper and Brass Tacks,
BRASS AND IRON ESCUTCHEON PINS, &c., &c.,
MANUFACTURED BY
DUNBAR, HOBART & WHIDDEN, So. Abington Station, Mass.
New York Salesroom, 39 Warren St. Goods made to order from sample.
Particular attention given to orders for EXPORT.

**JEWETT'S
Revolving Perch
BIRD CAGE.**
PATENTED.
The Revolving Perch Cage must be seen in practical operation to be able to appreciate what a charming novelty it is; or the great advantage to the bird, in the way of exercise, which all canaries require to keep them healthy, and consequently in song.
Catalogue sent to dealers only on application.
Also Manufacturers of the handsomest line of Bird Cages in the United States.
**JOHN C. JEWETT & SONS,
BUFFALO, N. Y.**

**CHAMPION
HOG RINGER
RINGS AND HOLDER.**
Only double Ring ever invented. The only Ring that will effectively keep Hogs from rooting. No sharp points in the nose.
Ringers, 75c. Rings, 50c. 100. Holders, 75c. Huskers, 10c.
CHAMBERS, HERING & QUINLAN, Exclusive Manufacturers, Decatur, Ill.

THE AVALANCHE ROTARY, FLOUR AND MEAL



SIFTER
Scoop, Measure, Mixer, Weigher, Egg Beater, Rice Washer, Tomato, Starch, Wine and Fruit Strainer.
Guaranteed the very best, and the cheapest to the jobbing trade. It commends itself wherever shown. WRITE FOR PRICES.
N. DUBRUL & CO., 441 & 443 Plum St.
Lantern and Sieve Mfrs. CINCINNATI, O.
SMITH BROS. & CO., Agents, 73 Fulton St., N. Y.

Gilbert & Bennett Mfg. Co., GEORGETOWN, CONN., MANUFACTURERS OF

IRON WIRE, SIEVES AND WIRE CLOTH,

Power Loom Painted Screen Wire Cloth,
GILBERT'S RIVAL ASH SIEVE,
Galvanized Twist Wire Netting,
THE UNION METALLIC CLOTHES LINE WIRE,
Warehouse, - 973 Pearl St., New York.

**SEAMLESS
BRASS & COPPER
TUBING,
MERCHANT & CO.,
PHILADELPHIA.**

THE UNIVERSAL LIFTING JACK,

For lifting carriages, wagons, heavy loaded teams, fire engines, railway cars, &c. Four sizes, with patent rubber cushions; will not mar the finest painted carriage.
DINSMORE MFG. CO.,
235 Washington St., BOSTON.
Silver medal awarded by Massachusetts Mechanics Charitable Association.
FOR SALE BY
SARGENT & CO., 37 Chambers St., New York.
MACOMBER, BIGELOW & DOUSE, 156 Oliver St., Boston.

**John Maxheimer,
Manufacturer of
Patented
Japanned, Tinned
Wire,
First and Second-
Class Brass
Bird Cages.**
Wires on both classes fastened without solder. The cheapest and most saleable in market.
347 & 349 Pearl St., New York.

TACKLE BLOCKS.
Rope and Iron Strap of all kinds. Lignum vitae Wood for Ten-Pin Balls.
Wm. H. McMillan & Bro.,
Office, 115 South Street, New York.
Factory, 39 to 40 Penn St., Brooklyn, N. Y.

In addition to the great variety of Iron and Brass Pumps which we have been manufacturing for years, we are now making a full line of COPPER PUMPS under a patent granted July 9, 1878. The Barrel and Cone are drawn in one PIECE. No brazing or soldering is required. Being made of as heavy stock, they are stronger and more durable, give a perfect valve seat, and require less repairs than those made in the old manner. The Barrels are tested with a five hundred pound inside pressure to the square inch. The Spout also is seamless. Dealers and Plumbers pronounce them far superior to any before in the market. The inside of the Pump and the working parts are thoroughly flamed, giving a healthy surface for the contact with water. The handle is convenient and nickel-plated. The Pumps are highly finished, neatly painted and decorated with gold bronze, the whole being a highly serviceable and ornamental article for a kitchen or the most costly residence. Discount to the trade, 25 per cent. No charge for boxing. Freight paid to Boston or New York. Orders for all varieties of Pumps filled promptly. Please send for price list.

UNION MFG. CO., New Britain, Ct.
Warehouse, 98 Chambers St., New York.

For sale in Boston by Walworth Mfg. Co., Hamblen & Mathews, Braman, Dow & Co., Eaton & Dana, Macomber, Bigelow & Dowse, M. C. Warren & Co., and Bogman & Vinal; in Worcester by Belcher Bros., and in Worcester by C. Foster & Co. and White & Conant.

AUBURN FILE WORKS,

Superior Hand-Cut
FILES AND RASPS,
MADE FROM IMPORTED STEEL. EVERY FILE WARRANTED.
FULLER BROS., Sole Agents,
89 Chambers and 71 Reade Streets, N. Y.

**McCAFFREY & BRO.,**

PENNSYLVANIA FILE WORKS,

Philadelphia, Pa., U. S.



Manufacture and keep in stock a full line of **FILES** and **RASPS** only, for which we claim special advantages over the ordinary goods, and ask domestic and foreign buyers to allow us to compete for their trade.

Superiority acknowledged wherever used, sold or exhibited.

**SNELL MFG. CO.,**

FISKDALE, MASS.,

MANUFACTURERS OF

Augers, Auger Bits,

BORING MACHINES & BORING IMPLEMENTS.**TENNIS & WILSON,**

Sole Agents,

80 & 82 Reade St., NEW YORK.

FIRST MEDAL AND AWARD

given to the **SNELL MFG. CO.** for the highest standard of perfection attainable.
Centennial Exhibition, Philadelphia, 1876.



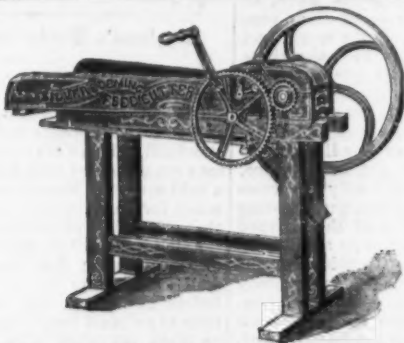
SNELL'S JENNINGS PATTERN BIT,
Manufactured from Extra Cast Steel and warranted.

SOLE MANUFACTURERS OF

Rice's Patent Superior Boring Machines and
Snell's Upright Machines.

Snell's Solid Cast Steel Augers, Auger Bits, Car Bits,
Screw Driver Bits, Taper Pod Gimlets, Taper Pod
Gimlet Bits, Countersink Gimlet Bits, Long
Millwright Augers, Long Rafting Augers,
Coopers' Doweling Bits,

AND ALL KINDS OF MACHINE BITS MADE TO ORDER.



SILVER & DEMING MFG. CO.,
SALEM, OHIO,

MANUFACTURERS OF

THE SILVER & DEMING FEED CUTTER.

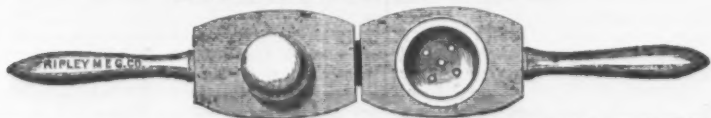
Seven sizes for Hand and Power.

The most popular Feed Cutter in America.

Send for prices and discounts.

RIPLEY MANUFACTURING CO.,

Unionville, Conn., U. S. A.

**BEST PORCELAIN-LINED LEMON SQUEEZERS.**

"Common Sense" Mouse Traps.

HAND-MADE ROSEWOOD FAUCETS.

Housefurnishing Hardware.

FOR HOME AND EXPORT TRADE.

**WM. R. HARTIGAN, Burlington, Ct.,**

Manufacturer of all kinds of

TOOL HANDLES AND SEAT STICKS FOR CARRIAGES, &c.
Also all kinds of Enamelled Goods made of wood, such as Drop Knobs, Furniture Knobs, Organ Stops, Brush
Handles, &c., &c. Also sole manufacturer of the Patent ANTI-SERVOIS' TRIANGULAR PENHOLDER.
Send for Catalogue and Price List before purchasing. F. R. EMMONS, Agent, 132 Duane St., New York.
Manufacture at BURLINGTON, Conn., U. S. A.

WHEELER & MELICK CO.,

ALBANY, NEW YORK, U. S. A.,

Manufacturers of

IMPROVED FARM IMPLEMENTS
AND MACHINERY.

FILES & RASPS,

Established 1868.

Best Cast Steel.

HAND-OUT. Manufactured by
JOHNSON & BRO.
No. 1 Commercial Street, Newark, N. J.

SPENCER & UNDERHILL,

94 Chambers St., N. Y., Agents for

American Screw Co.'s Wood, Machine and
Rail Screws, Stove and Tire Bolts, Rivets, &c.
O. Ames & Sons, Shovels, Spades and Scoops.
A. Field & Son, Tacks, Brads, Nails, &c.
G. F. Warner & Co., Carriage Clamps.
We have also on hand a general assortment of Hardware

**THE GIANT PAD LOCK.**

Manufactured by

THE SMITH & EGGE MFG. CO.

(Centennial Award.)

"Superior in Every Respect."
This is one of the best selling Locks in the market,
and affords the dealer a large profit. It is thoroughly
and strongly made—of the best material—very hand-
some in appearance, and every Lock is warranted.
Orders solicited. Address as above.
Lock Box 105, Bridgeport, Conn.

PRIZE MEDALLISTS:

London, 1862; Oporto, 1865; Dublin, 1865; Paris,
1867; Moscow, 1873; Vienna, 1873, and Phila-
delphia, 1876.

CLARK & CO.,

Original Inventors and Sole Patentees of

Noiseless Self-Coiling Revolving
STEEL SHUTTERS,
FIRE AND BURGLAR PROOF.

ALSO IMPROVED

Rolling Wood Shutters

Of various kinds. Endorsed by the Lead-
ing Architects of the World.

Send for Catalogue.

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Solicitors of Patents and Coun-
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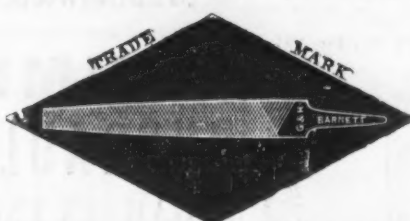
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THOMAS D. STETSON, 23 Murray St., N. Y.,
Patent Solicitor and Expert.

PATENT MINERAL WOOL,
Entirely fire-proof, undecaying and the best non-
conductor of Heat, Cold and Sound. Used exten-
sively for lining steam pipes and boilers, under-
ground and open-air pipes, water tanks, refrigerat-
ors, cold storage houses, roofs and walls of dwell-
ings, drying kilns, deadening floors of railway
passenger cars, &c.
A. D. ELBERS,
26 1/2 Broadway, NEW YORK.
Address P. O. Box 4451.

Black Diamond File Works.

Awarded by Jurors of Centennial Exposition, 1876, for
"VERY SUPERIOR GOODS."

G. & H. BARNETT

39, 41 & 43 Richmond St., Philadelphia.

CHARLES B. PAUL,

Manufacturer of HAND CUT FILES.

Warranted CAST STEEL. 187 Tenth Street, Williamsburgh, New York.
All descriptions of Files made to order. Price List mailed on application. Established 1863.

THE STANLEY WORKS,

MANUFACTURERS OF

Wrought Iron Butts, Hinges

AND

DOOR BOLTS,

Plain, Japanned, Bronzed and Plated.

We are prepared to furnish all kinds of

WROUGHT IRON BUTTS, both Common and Bright Finish.**FACTORIES:****WAREHOUSE**

New Britain, Connecticut. 79 Chambers St., New York.

SABIN MFG. CO.,

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PATENT DOUBLE ACTING SPRING BUTTS**Sabin's Lever Door Springs**

For Heavy Doors.

The BOSS and CROWN SPRINGS for Screen and Light Inside Doors.

General Agents. { HENRY BROOKS & CO., 127 Milk Street, Boston.
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HARDWARE MANUFACTURERS' AGENTS, as follows:
Lawrence Curry Comb Co., Wheeling Hinge Co., W. D. Turner & Co.,
Curry Combs, Hinges and Wrought Butts, Geneva Hand Fluters,
Howard Bros. & Co., Northwestern Horse Nail Co., D. B. Niles & Son,
Cotton, Wool and Curry Cards, Horse Nails, Hand and Sleigh Bells,
Thompson, Derby & Co., A. G. Coe & Co., C. S. Osborne & Co., Com-
Scythe Snaths, Coe's Genuine Screw Wrenches, passes, Calipers, Dividers, &c.
Otago Fork Mills, F. K. Sibley, Emery Cloth, C. W. Maguire, Brushes,
Steel Forks, Rakes, Hoes, &c., Halroyd & Co., Stocks & Dies, Clark Bros. & Co.,
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H. W. Kipp, Nail Hammer, Ripley Mfg. Co., Mouse Traps, ine Knox Fluting Machine,
Kloman, Park & Co., Vices, Plymouh Tack & Rivet Works, T. B. Barclay,
Picks, Mattocks, Grab Hoes, &c., Carr, Crasley & Deelin, "Dodge's" Kentucky Cow Bells,
Jacobus & Nimick Mfg. Co., Miscellaneous Hardware and Cast Lane Bros., Swift's and Gro-
Locks, &c., Bits, C. C. Richards Hardware Co., cern's Coffee Mills and Measuring
Sandusky Tool Co., Cast Steel Shears and Sissors, Bright Wire Goods, Picture Nails,
Planes and Plane Irons, J. Mallinson, &c.
Geo. M. Eddy & Co. Measuring Tapes, Ketchum's Pat. Metallic Sieves.

**THE ADAMS AND WESTLAKE**

Wood-Lined and Plain Zinc

STOVE BOARDS.

NEAT AND SUBSTANTIAL.

Will not warp or lose their shape. Easily kept clean.

For sale by Hardware and Stove Dealers.

THE ADAMS & WESTLAKE MFG. CO.,

CHICAGO,

Sole Manufacturers of Mann's Tin-Rim Sieves.

THE AMERICAN MACHINE CO.,

Manufacturers of

HARDWARE SPECIALTIES.

Office and Factory:

No. 1916 to 1924 North 4th St., Philadelphia.

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SPECIALTIES: Fluting Machines, Hand Fluters, Plating Machines, Christmas Tree Holders,
Bickford Portable Pump, Mrs. Potts' Patent Cold-Handle "Crown" Irons, &c., &c.

**LAKE SUPERIOR PAINT CO.,**

Manufacturers of

Extra Fine Iron Ore Paint,

CLEVELAND, OHIO.

Trade Mark Patented.

P. O. address, Box 69.

TACKS, NAILS & RIVETS.

Brush Tacks, Looking Glass Tacks, Picture Frame Points, &c.

New York Salesroom, 116 Chambers Street.

AMERICAN TACK CO., Fairhaven, Mass.

A. FIELD & SONS,

TAUNTON, MASS.,

MANUFACTURERS OF

AMERICAN AND FRENCH

WIRE NAILS,

TACKS, SHOE NAILS,

And Every Variety of Small Nails.

Offices & Factories at Taunton, Mass.

Warehouse at 78 Chambers St., New York,

where may be found a full assortment of Tacks, Brads, Wire Nails, &c., for the accommodation of the New York Wholesale and Jobbing Trade.

Any variations from the regular size or shape of the above-named goods made from sample to order.

A SILVER MEDAL has been awarded above goods at the Paris Exposition, being the only medal awarded any American manufacturer of Tacks and Wire Nails.

Hoisting Machinery
MANUFACTURED BY
CRANE BROTHERS MFG. CO.,
Chicago.

STAR LOCK WORKS.
ESTABLISHED 1836.

Trunk Locks, Door Springs,
Pad Locks, Trunk Stays,
Dead Latches, Keys, &c., &c.
110 South 5th St., and Sansom, bet. 5th
and 9th, PHILADELPHIA.

PATENTED
Scand. Pad Locks.
With Flat Keys.
Shackle secured to
the Lock Box.

HILLEBRAND & WOLF.

A. A. WEEKS,
Manufacturer of
Hardware Specialties,
82 John St., New York.

REDUCTION IN PRICE LIST
FOR THE FALL TRADE.
AMERICAN MINCING KNIFE,
BEST AND CHEAPEST.

WITH
ONE, TWO
and
Three Blades.
Pat. Feb. 11, 1879.

Catalogue of Hardware Novelties upon applica-
tion.
PHILADELPHIA NOVELTY MFG. CO.,
391 Cherry Street, Philadelphia, Pa.

CLOTHES WRINGERS.

"EUREKA"
WRINGER.
BOSTON.

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THE ANSONIA CORRUGATED STOVE PLATFORM,
With Patented O. G. Border.



Cut Showing Round Platform.

THE ANSONIA STOVE REST.



This Cut is the Actual Size of 2-inch.

ROUND ZINC.

27, 30, 32, 34, 36 inch.

Manufactured of heavy metal, requiring
no nailing or lining, the edge retaining its
form. Superior pattern, finish and quality.
Price as low as any.

Send for List and Discount.

Packed 12 in each case.

STOVE RESTS are designed to
place under the feet of Stoves
and Ranges, for the purpose of
raising them from the floor or
platform. They are about 4-
inch thick, covered with sheet
metal in zinc, brass and nickel
plate. Highly polished and
finished. Packed one set of 4 pieces
in each paper box, and 36 sets in
each case. Sizes (inside of circle
on top):
2, 2 1/2, 2 3/4, 3 1/2 inch.
Send for full Description
and Prices.

ANSONIA BRASS AND COPPER CO., 19 Cliff St., New York.

NEW YORK BELTING & PACKING COMPY
The Oldest and Largest Manufacturers in the United States
OF

Vulcanized Rubber Fabrics
FOR MECHANICAL PURPOSES.

WAREHOUSE, 37 and 38 Park Row, New York.

ORIGINAL
Solid Vulcanite
EMERY WHEELS

Emery Wheel. LARGE WHEELS MADE ON CAST-IRON CENTER IF DESIRED.
The properties of these Wheels are such that they can be used with great advantage and
economy for cutting, grinding, and finishing Wrought and Cast Iron, Chilled Iron, Hardened
Steel, Slate, Marble, Glass, etc. These Wheels are extensively used by manufacturers of Hard-
ware, Cutlery, Edge Tools, Plows, Safes, Stoves, Fire Arms, Wagon Springs, Axles, Skates, Agri-
cultural Implements, and small Machinery of almost every description.

PATENT ELASTIC
Rubber Back Square Packing
BEST IN THE WORLD.
For Packing the Piston Rods & Valve Stems of Steam Engines & Pumps.

B represents that part of the packing which, when in use, is in contact with the Piston rod.
A the elastic back, which keeps the part B against the rod with sufficient pressure to be steam tight,
and yet creates but little friction.
This Packing is made in lengths of about 20 feet, and of all sizes from 1/4 to 2 inches square.
JOHN H. CHEEVER, **NEW YORK BELTING & PACKING CO.,**
Treasurer. 37 and 38 Park Row, New York.

Beardsley Scythe Co.,
Manufacturers of
GRASS, GRAIN & BUSH SCYTHES,
Hay Knives & Corn Knives.
West Winsted, Conn.

See our advertisement in The Iron Age first issue of each month.

RICHARD DUDGEON,
No. 24 Columbia Street, New York,

Maker and Patentee of the Improved
Hydraulic Jacks
AND
Punches.

Roller Tube Expanders and Direct Acting Steam Hammers.
Communications by letter will receive prompt attention.
Jacks for pressing on Car Wheels or Crank Pins made to order.

INDUSTRIAL ITEMS.

NEW HAMPSHIRE.

William Corey is about to occupy his new
three-story brick needle factory at Manchester.
The main building is 30 feet wide, with
an L 12 feet square and a boiler room 24
feet square. The main apartment is in the
second story, which is lighted by 19 win-
dows, and where 35 hands will be employed
in the manufacture of needles alone. On
the ground floor is a room of commodious di-
mensions, which will be used for the engine,
of Haskins' manufacture, 12-horse power,
and as a machinery and repair shop. Ad-
joining it is the boiler room, with a concrete
floor and solid 16-inch brick walls, where
will be located an 18-horse-power boiler.
Some 60 hands will be employed.

MASSACHUSETTS.

The Lowell File Works, of which Sager,
Ashworth & Co. are proprietors, are busy
with a rush of orders, and additions are con-
stantly being made to their force of em-
ployees. Their specialty is hand-made files.
David Knox, machinist, of Lynn, has just
built an addition to the rear of his shop, 15
by 36 feet, and one story in height, for forg-
ing purposes.

The Mount Hope Iron Works, at Somer-
set, according to their custom, were idle in
August for the purpose of taking stock and
doing general repair work on furnaces and
machinery. They resumed operations on
September 1. The report that the recent
rise in the price of nails was the cause of
their resuming is untrue. Their plate iron
business and low stock of nails made re-
sumption necessary. They had been run-
ning full up to July 31.

The Somerset Iron Works, Somerset, have
been idle 15 months, and are still in that
condition.

The Florence Tack Co., of Northampton,
have lately been running their 40 machines
11 hours a day. The time from January to
June was 12 hours, and it was then reduced
to 10, because it was felt that the workmen
ought not to work longer than that during
the hot weather. The company have added
materially to their capacity for production
recently by increasing their machinery, in
the hope of being able to catch up with
their orders, but they are still behind.

CONNECTICUT.

Beecher & Peck, of New Haven, are very
busy filling orders for the Peck patent drop
press, of which they are the sole manufac-
turers. For the past three months they
have been obliged to run 11 1/2 hours per day
to keep up with their orders.

NEW YORK.

Both furnaces of the Bay State Iron Co.,
at Port Henry, are in blast; also the Cedar
Point Furnace and one of the Crown Point
furnaces. The second stack of the Crown
Point Iron Company will be put in blast in
about three weeks.

NEW JERSEY.

The Cumberland Nail and Iron Company,
at Bridgeton, have been in the habit of mak-
ing 140,000 kegs of nails and 4,000,000 feet
of gas tubes per annum, but during the great
depression in the iron business they have not
worked up to that figure. The company say
that if the present condition of trade con-
tinues throughout the year, they will be
more likely to exceed than fall short of those
figures. These works were established in
1814, and were among the first to manufac-
ture nails by machinery in the United States.

PENNSYLVANIA.

The immense works of the Thomas Iron
Company at Hokendauqua are now in full
blast, giving employment to fully 500 men.
The works comprise eight stacks, six at
Hokendauqua and two at Lock Ridge. This
is the first time that all of the eight stacks
have been running simultaneously. The
capacity of all the stacks is about 100,000
tons annually, and they are running night
and day. The company mines most of the
ore itself.

The improvements at the rolling mill of
the Birdsboro Iron Works are steadily pro-
gressing. A machinist from the Scott
foundry recently began work upon setting
up and putting together the new engine.
The roll house and a portion of the squeezer
are in position, as is also the pipe to convey
the water to the turbine water wheel. The
mill factory has been white washed and
much improved. The work of building the
new railroad bridge across the Schuylkill at
this place is going on rapidly. Messrs.
Lovely & Co., of Philadelphia, have just
erected a hoisting engine for the contracting
parties, to be used in raising the building
material. It works nicely, and is very
effective in accelerating the construction of
the bridge.

The West Middlesex Rolling Mill was idle
before last week, but lighted up for opera-
tion on Tuesday the 16th inst. The Wheeler
Iron Company, like many others, was caught
with a contract for pig iron on hand, which
contract had to be filled, no matter what the
ruling rates were.

The Fanny Furnace is doing first rate.
The prospect of putting light in the Shenango
furnaces is getting brighter every day.—
Sharon Herald.

The Glendon Iron Company have five fur-
naces in blast at Glendon, and have re-
cently put up a new blowing engine of 300-
horse power.

The Reading Times and Dispatch of Sep-
tember 10 says: The Coleman heirs of Leba-
non have just effected an important pur-
chase of land immediately outside the bor-
ough limits. The purchase includes two
farms, known as the John and Jacob Funk
farms, and embraces some 160 acres. The
amount paid was in the neighborhood of
\$60,000. These farms were secured by the
present owners by reason of the contiguity
of the land to the junction of the Cornwall,
Lebanon Valley and Pinegrove Railroads,
which, as will be readily seen, furnish the
key to very superior facilities for railway
transportation. The idea is to locate a fur-
nace at this point, the erection of which, it
is rumored, will be commenced within a
short time by the new owners. It is claimed
that, in addition to the excellent transporta-
tion facilities which may thus be obtained, a
saving of \$25,000 per annum in freights
would be saved, as all the product of the
Cornwall furnaces has to be carried over the

Cornwall Railroad to Lebanon, where it is
delivered to buyers. An abundance of lime-
stone is on these farms, so convenient and
easily quarried that a saving in this direc-
tion would also follow. Heavy shipments of
ore are now being made over the Cornwall
road. During the month of August last
there were transported over that road from
the ore banks to Lebanon 30,000 tons of ore.
At \$2.50 per ton—allowing 50 cents per ton,
the cost of mining—the net profits per month
foot up to the handsome sum of \$60,000, or
at the rate of \$720,000 per annum, with a
prospect of a still further increase as busi-
ness continues to revive. Nearly all of the
furnaces throughout the country that are
being overhauled, rebuilt, &c., by Weimer
& Bro. will be provided with Mr. Weimer's
blowing engine, a specimen of which at-
tracted so much attention at the Centennial
Exposition. This engine costs some \$800,
the kind formerly in use costing upward of
\$25,000, quite an item of saving in this
particular.

The Pottstown Iron Company will have a
boiler plate tank made by Dennithorn &
Bros., Spring City, the diameter to be 25
feet and the height 12 feet.

Pig iron is now being shipped away by
boat and rail from the works of the Chestnut
Hill iron ore company, near Columbia, at
the rate of 100 tons per day, and this rate of
shipment will be kept up until all the iron—
about 10,000 tons—at present stacked in
their yards here has been disposed of.

Work has been begun at Phoenixville on
the iron cradle in which the great Egyptian
monolith which is to be transported to New
York is to be rocked. Some one will have
to go to Egypt to put the machinery in posi-
tion.—Reading Eagle.

Clark, Reeves & Co., of Phoenixville, have
been awarded a contract for the building of
three miles of bridge work for the govern-
ment of Chili, South America, to be com-
pleted within two years.

Responsible eastern men are in Harrisburg
negotiating for the lease of the Price & Co.'s
Furnace in that city, the Dock Furnace below
Baldwin, Dr. Heck's Emaline Furnace above
Dauphin, the Richmond Furnace in Franklin
county and the Antietam Furnace in Mary-
land.—Reading Eagle.

McLanahan, Stone & Bayley, Hollidays-
burgh, are building an addition to their
foundry. The new building is 28 by 48 feet,
and is intended for making cores, &c. They
cast recently a monster casting called a base
ring for a furnace. It is in four sections,
each one being about 20 feet in length and
weighing some 6000 pounds. It will be
shipped to one of the Johnstown furnaces.

The new iron company which has pur-
chased the property known as the locomotive
works, Lancaster, although for a number of
years it has not been adapted to the manu-
facture of locomotives, will be ready to
manufacture iron as soon as some small
repairs needed are made and the necessary
supplies are gathered together. The foundry
and machine shop the company do not
propose to operate, believing it to be more
prudent to adhere strictly to the object of its
formation, which is the manufacture of all
shapes of rolled iron, excepting rails. The
company has offers to rent the foundry and
machine shop, and expects to make that
disposition of them. The iron mill is in ex-
cellent order and is equipped for the com-
pany's business, as may be imagined from
the early period at which it is expected to
have it running. The capacity of the works
is about 30 tons a day, and the demand for
rolled iron is now so brisk that the mill is
expected to be worked at once up to its full
extent. The company has been organized,
under the limited partnership act of 1874,
by the selection of Andrew J. Steinman,
chairman, Wm. G. Mendenhall as secretary
and treasurer, William B. Middleton as
superintendent, and Howard W. Middleton,
F. W. Yarnall and R. H. C. Hill to act with
the chairman and secretary as managers.

PITTSBURGH AND VICINITY.

We give below a tabular statement of the
receipts of pig iron, ore, scrap and blooms
in this city during the months of July and
August. The figures show that the iron
movement in August was larger in volume
than that of any previous month in the his-
tory of the city. In the tables the first
column shows the receipts of pig iron, the
second those of ore, the third includes under
the heading of "scrap," old rails, old wheels,
&c., while in the fourth are grouped blooms,
billets and muck bar:

	July.	Metal.	Ore.	Scrap.	Bl'ms.
	Tons.	Tons.	Tons.	Tons.	Tons.
P. F. W. & C. R. R.	4,488	5,728	420	360	
C. & P. R. R.	528	11,576	168	444	
P. & L. E. R. R.	852	7,800	...	432	
P. R. R.	4,476	36	900	276	
A. V. R. R.	1,236	976	900	...	
West Penn. R. R.	3,960	
Pgh. & Conn. R. R.	1,224	12	324	72	
F. C. & St. L. R. R.	96	...	208	248	
By River.	685	...	566	...	
Total.	17,245	25,428	3,286	1,912	
July, 1878.	16,225	15,400	1,820	530	
	August.	Metal.	Ore.	Scrap.	Bl'ms.
	Tons.	Tons.	Tons.	Tons.	Tons.
P. F. W. & C. R. R.	6,276	10,356	1,188	24	
C. & P. R. R.	656	14,392	300	82	
P. & L. E. R. R.	720	7,558	...	216	
P. R. R.	4,992	...	1,092	192	
A. V. R. R.	1,836	...	432	984	
West Penn. R. R.	5,340	
Pgh. & Conn. R. R.	516	...	672	132	
F. C. & St. L. R. R.	660	84	232	432	
By River.	1,014	2,050	
Total.	28,074	33,650	3,816	2,820	
August, 1878.	14,350	25,700	1,230	532	

Journal of Industry.

The steel works, Beaver Falls, are run-
ning on extra heat daily, and still are not
likely to catch up with the demand in four
or five months.

At the cutlery works, Beaver Falls, busi-
ness is still ahead of the forces, and the shops
are running 14 hours a day. A squad of
fresh, skilled workmen—grinders and filers
—arrived from Germany last week.

Twelve and a half hours is a day now at
the file works, Beaver Falls, and there is no
prospect of an abatement of business. This
firm have an exhibit at the Pittsburgh Expo-
sition.

Hubbard, Bakewell & Co., at their Beaver
Falls works, are still working on last June's
orders, and have put no goods in the ware-
house for over three months.

Mr. J. S. Craft is making preparations to
start up a new rolling mill at Beaver
Falls, and expects to have it in operation by
November. This mill will have four pud-

Cutlery.

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Manufacturers of
PEN AND POCKET CUTLERY,
Solid Steel Scissors, Shears, Razors, &c.
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"ELECTRIC RAZORS,"
And the celebrated "ELECTRIC SHEARS." Nickel Plated
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**Improved
Carpenters'
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WAREHOUSES,
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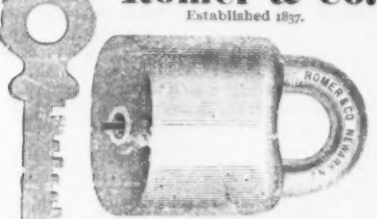
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only by
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Enterprise Mfg. Co.
GENEVA, O.

6th. Serving fish balls, potato cakes, &c. In fact it is preferable to all other spoons for general use.

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Also Patent Stationary R. R. Car Door Locks. Pat-
ent Piano and Sewing Machine Locks.
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Illustrated Catalogue sent to the trade on appli-
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These shears are unsurpassed for cheapness, dura-
bility and utility. They are made of one solid piece
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Having largely increased our facilities for the man-
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the trade at a large reduction from our former
prices. The list price of the large size is now \$12.00
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very best. All are nickel-plated and furnished with
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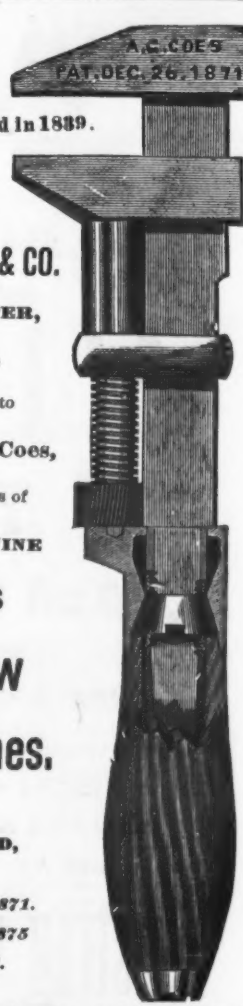
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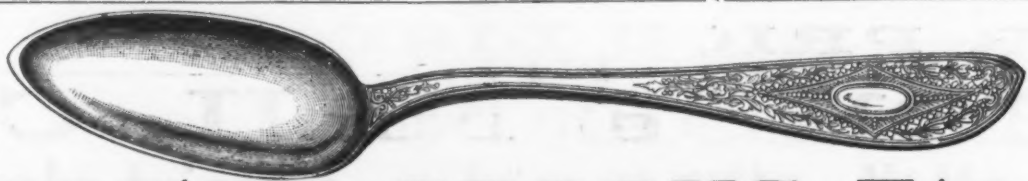
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Outfits complete, with Dynamo-Electric Machine
Tanks, Anodes, Solution, &c., &c., \$250.

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We call attention to infringers of the Weston
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dling furnaces, two heating furnaces, one
4000-pound steam hammer and two trains of
rolls. Refined forge iron, and, as a specialty,
iron for steel-making purposes, will be the
product of this mill. The machinery, ham-
mer and building have all been contracted
for and are partly on the ground.

The Beaver Falls Novelty Works shipped
500 dozen coffee-mills to a firm in St. Louis
recently.

Thomsen & Co. are building a large black-
smith shop at their glass works on Neville
street, to afford better facilities for making
pipes, tools, &c. The last two weeks is
about the only time they have been running
nightly since they started in June. The
reason, as has been published, is briefly that
the union would not permit the blowers to
work. This threw the firm so far behind in
their orders that they were threatened with
legal proceedings by Western firms for not
filling contracts. They are working along
smoothly now, however.

At the Pittsburgh Forge and Iron Co., the
bar, guide and puddle mills are all on dou-
ble; three steam hammers are also working
night and day in the forge, turning out over
100 axles in 24 hours.

At Lewis, Oliver & Phillips' all depart-
ments are on double turn.

Miller, Metcalf & Perkin, proprietors of
the Crescent Steel Works, have opened a
branch warehouse at No. 40 Dearborn street,
Chicago.

Only two mills in this city are now using
natural gas as fuel, though when the experi-
ment was first made it was supposed that it
would quite generally supersede coal.

WEST VIRGINIA.

The Wheeling Sunday Leader has the fol-
lowing: The Aetna Mills are running full
time and turning out large orders of iron.
Spence, Bragg & Co.'s foundry, at Martin's
Ferry, is doing all the work that it is pos-
sible for them to do. Spence's Agricultural
Works, at Martin's Ferry, have shut down
for the summer, and will not resume before
the 1st of November. The Moundsville
Rolling Mill made a large shipment of cotton
ties on the steamer Andes on her last trip
down. The Laughlin Mills, at Martin's
Ferry, shut down recently, but will resume
shortly. The mills have lost but three days
since they first started up.

The Benwood Mill is now on in all its de-
partments.

ILLINOIS.

The Central Iron and Nail Works com-
menced to run the puddling department
double turn, September 8th. Orders are
coming in faster than they can be filled.
They expect to run the puddle department
double turn, to supply the factory with iron
for two or three months, when they shall
have more furnaces erected, so that they
can supply them on single turn.

WISCONSIN.

The National Furnace, Depere, has blown
out for repairs, which will be made as
speedily as possible, and the stop will be of
short duration.

KENTUCKY.

The Greenup Lime Works blew in week
before last. They are now supplying lime-
stone to the furnaces along the river. They
sold a large load to Ohio Furnace at 90 cents
per ton on the barge recently.

The Pennsylvania Furnace was put in
blast Wednesday last.

The Mt. Savage Furnace is about to blow
out to put in a new hearth.

The Norton Iron Works are still running
full time in all of their departments. The
furnace is working well, making something
near 50 tons of good No. 1 iron per 24 hours.

The rolling mill, boiling and heating fur-
naces are all at work turning out near 500 tons
of nail plate per week. The factory is cut-
ting about 5,000 kegs of nails per week and
shipping a great many kegs.

Charcoal at the rate of 30 loads per day is
now coming in at Hunnewell Furnace.

MICHIGAN.

The Carp River Iron Company has taken
a lease of the Ishpeming peat furnace, and
will at once proceed to put it in condition to
blow in. The stack will be lighted in the
course of three months—just as soon as the
necessary repairs can be made and a supply
of fuel secured. The stack is 42 feet high,
with hoes 9 feet in diameter, and there is no
reason why, as a charcoal furnace, it cannot
be made a paying concern. The coal will
necessarily have to be brought from a dis-
tance, by rail, but its close proximity to the
mines will offset that disadvantage in the
saving of freights on the ore consumed.—
Marquette Mining Journal.

The Carp River Furnace was blown out
week before last, after a run of 19 months
on one hearth, during which time she made
8200 tons of iron, mostly No. 1, 2 and 3
grades. She is now receiving a new hearth
and other necessary repairs, and will blow
in again this week.

It is now pretty certain that the Lake
Superior Company have in contemplation the
starting up of the Grace Furnace, in this
city, early next spring. It will not be leased
to any one, but the intention is to make a
stock dividend of the furnace property to
the mine shareholders, and organize a new
and distinct company, by which the furnace
will be owned and operated.—Marquette
Mining Journal.

The Leland Iron Company, of Detroit,
have purchased the charcoal blast furnace
at Leland, formerly belonging to the Wyandotte
Rolling Mill Company. Extensive im-
provements and repairs are being made by
which the capacity of the furnace, which is
to be blown in at the opening of navigation,
will be increased.

WYOMING.

The Rocky Mountain Paint Company's
mill and machinery at Rawlins, was de-
stroyed by fire on the 10th instant. Loss,
\$150,000.

The proprietors of the Westphalian and
Silesian rolling mills for the manufacture of
iron pipes, are reported to have signed a
convention pledging themselves to a general
advance of prices, which are for the future
to be fixed by mutual arrangement.

The Valley Virginian reports the discovery,
near the Elizabeth Furnace, of a 35-foot de-
posit of rich red hematite iron ore.

METALLURGICAL NOTES.

ON THE APPLICATION OF THE SPECTROSCOPE
TO THE ANALYSIS OF IRON AND STEEL.

Messrs. John Parry and Alex. E. Tucker,
both eminent English metallurgical chemists,
have contributed to *Engineering* a series of
articles on the application of the spec-
troscopy to the analysis of iron and
steel, in which they give the results
of a long and laborious series of ex-
periments. These, they claim, show that
the spectroscopy is able and destined to fill
a gap in the means of research at the dis-
posal of chemists in iron and steel works,
and they hold out the hope that the spectro-
scopy will aid in revealing the causes of di-
versity in physical properties which the
ordinary chemical analysis fails to detect.
For producing the spectra, Messrs. Parry
and Tucker used a 6-inch coil, the battery
power for which was, after a number of ex-
periments, obtained by using 12 large car-
bon zinc elements and 12 quarts Bunsen
cells. Two induction coils were used. The
spectroscopy was an ordinary single prism
instrument, with a telescope for fixing the
position of any given line, the micrometer
scale being illuminated with an electric
lamp. In the production of spark spectra,
which were always photographed, Bunsen's
carbon electrodes were used. For photo-
graphing, Swan's dry plates, with ferrous
oxalate developer, were adopted after nu-
merous trials. With this apparatus they
took the spectrographs of a large number of
metallic chlorides, and turning to iron they
discovered that it is necessary to remove
the greater part of the iron from the solu-
tion with which the electrode is saturated, in
order to obtain spectra of the minute quan-
tities of the impurities in the commercial
products. In this way they obtained the
spectrographs of chromium steel, of tool and
Bessemer steel, of Swedish wire and Poor-
man iron, and comparing it with the char-
acteristic lines of the main elements, ar-
rived at the following results: Chrome
steel showed the chromium lines and seemed
deficient in manganese, while tool steel ap-
peared to contain more calcium, and Swedish
wire less calcium, than the others, while the
Bessemer spectrograph exhibited aluminum
lines. Messrs. Parry and Tucker have not,
it seems, gone into the more directly prac-
tical question of selecting steels or irons of
apparently equal chemical constitution, but
having different physical properties, and of
ascertaining by the spectroscopy whether
differences can be detected and to what they
are due. Should they succeed in doing this
—and it is perhaps saying little to state that
there is some promise of their doing so—
they will make an important addition to our
present means of research, which in some
cases so utterly desert us.

ASSAY OF ARGENTIFEROUS GALENA.

The usual methods of determining the
silver in argentiferous galena are dry assays,
the accuracy of which depends much upon
the skill of the assayer. However careful
he may be, certain losses both in scorification
and cupelling are unavoidable, so that the
assay is always favorable to the purchaser.
It is claimed in favor of these methods of
assay that the losses to which they give rise
fairly represent those of actual working.
Of late, however, the opinion has been more
and more gaining ground among metallur-
gists that it is a better plan to ascertain by
correct chemical analysis the true amounts,
and make allowances, &c., accordingly, as
it gives those in charge a fuller and clearer
idea of the actual sacrifices sustained by
present working methods, and can alone
serve as the basis of improvement. It is
for this reason that volumetric methods of
analysis, combining as they do accuracy and
rapid execution, are received with much fa-
vor by the managers and chemists of metal-
lurgical works. With the exception of the
fine silver assay, little progress has been
made in this direction in silver and lead
smelting works, and it may be of interest,
therefore, to give briefly the method pro-
posed by Herr Balling in the *Oestr. Zeitschr.
für Berg u. Hütten Wesen*. His assay is an
adaptation of Volhard's method, which we
understand is successfully competing with
Gay Lussac's fine silver assay in Germany.
According to Balling, from two to five grains
of the galena is very finely ground and inti-
mately mixed in a porcelain mortar, with
from three to four times its weight of a flux
composed of equal parts of soda and salt-
peter, placed in a porcelain crucible, cov-
ered, and, having been heated to thorough
fusion, stirred with a glass rod. It is then
allowed to cool, and afterward placed in an
evaporating dish partly filled with water,
where the melted matter is softened and
dissolved out of the crucible into the dish,
which is then heated and the watery solu-
tion is filtered into a flask. The residue on the
filter is rinsed back into the dish, very dilute
nitric acid is added, and the whole evaporated
to dryness. The dry residue is taken up
in water acidulated with nitric acid, heated,
and filtered back into the flask with the wa-
tery solution. The residue is washed with
hot water, the filtrate is allowed to cool in
the flask, ferric sulphate or iron alum is ad-
ded, and the liquid is titrated with a stan-
dard solution of sulphocyanide of potassium,
by which the silver is precipitated as sul-
phocyanide, insoluble in acids. The least ex-
cess of the sulphocyanide of potassium is
shown by the production of sulphocyanide of
iron, which colors the liquid red.

The report that Colonel Thomas A. Scott
has made financial arrangements in Europe
which insure the completion of the Texas
and Pacific Railroad will be welcome news
in Northern Texas. Whether Colonel Scott
intends to go beyond the Rio Grande is not
stated, but he will have to do some pretty
rapid construction work if he reaches that
point before the road which Mr. Huntington
is pushing eastward across Arizona and New
Mexico. Probably the junction of the two
roads will be at the river. The Texas and
Pacific has been fairly successful as a local
road, and has settled a large belt of country
with a prosperous farming population. Its
further progress westward will open new re-
gions to emigrants, well adapted for wheat
culture and stock-raising.

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These Knobs being light, do not wear the locks. They are at the same time exceedingly strong and handsome. We guarantee them to stand as long as the doors in any interior situation.

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NEAT, HANDY, POWERFUL AND DURABLE.



Of the many Cutting Nippers heretofore placed on the market, not one has supplied either of the two great needs long felt by all who use them, viz.: 1st. Increased power without a clumsy and expensive increase of size. 2d. That the construction of the Nipper should be such that any damage to the cutting jaw or handle, from wear or accident, could be repaired.

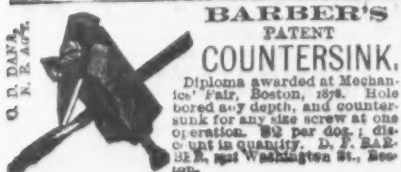
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These Nippers are made entirely of the very finest quality of steel, made expressly for them, the different parts being drop-forged by the Cold's Fire Arms Co., of Hartford, Conn., which is a sufficient guarantee of the excellence of the work.

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Wholesale Manufacturer of Coal Hods,
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Patented April 30th, 1878.
Re-issued July 8th, 1879.

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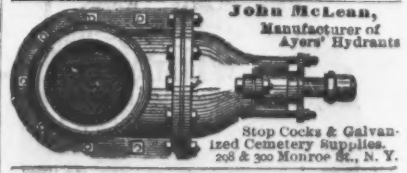
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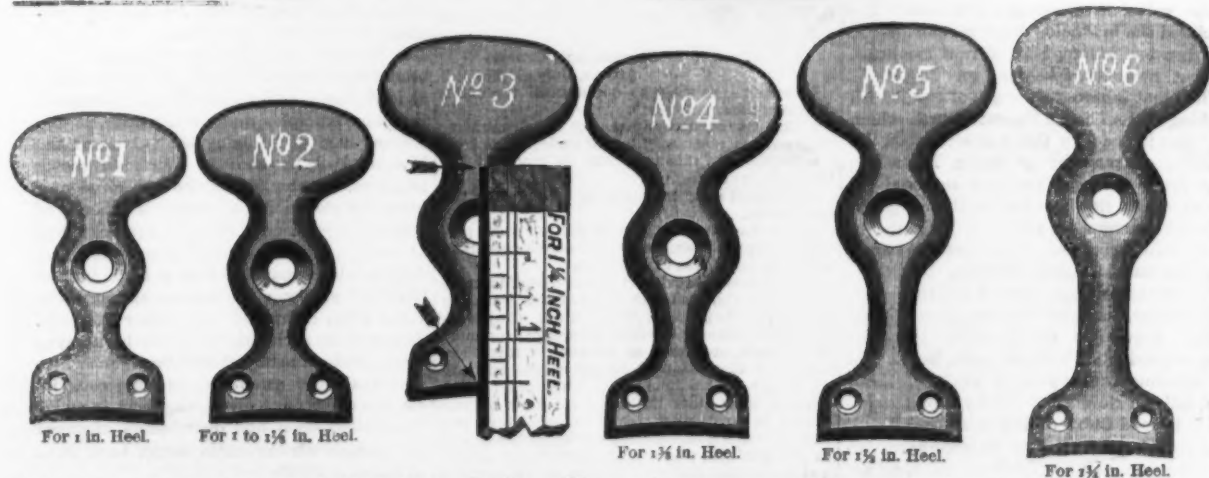
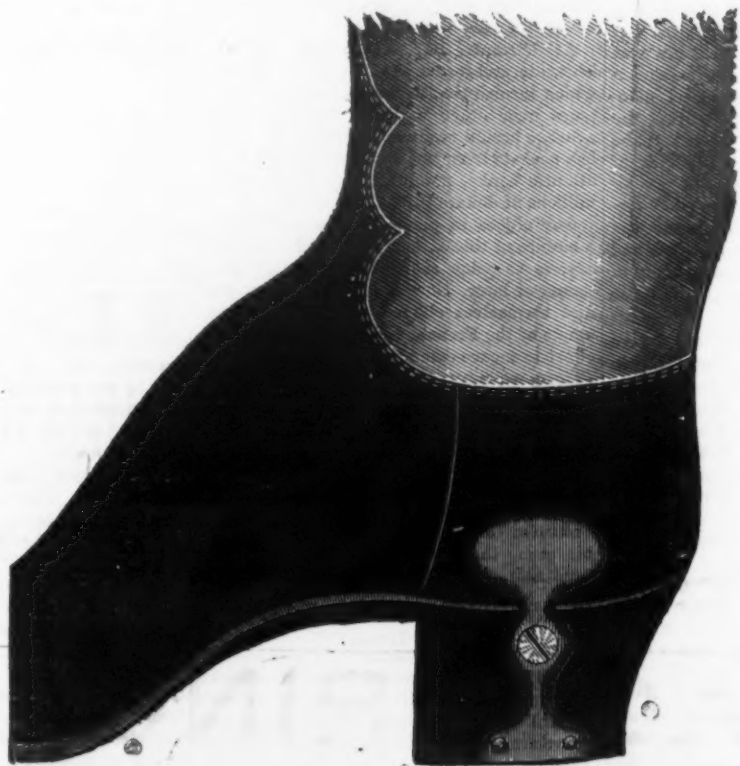
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also all kinds of Handles, Sledge, Chisel and Hammer Handles. Also
COTTON AND RAYE HOOKS.
Patented Feb. 12, 1877; a new combination of Hooks.
456 E. Houston St., New York City.

LABOR AND WAGES.

On the 1st of September the manufacturers of window glass in Baltimore expected to resume, but were disappointed by reason of the refusal of the glass blowers to work for 10 per cent. advance upon the wages paid them in 1878. The blowers work by the piece and pay their assistants—boys, called gatherers—by the month, which last year was at the rate of \$40. These boys now claim \$45 per month, which the blowers say is more than they can afford to give unless their wages are increased 15 per cent. The net amount averaged by each blower is about \$18 per week, or \$75 per month, and they insist upon an increase of 15 per cent. in order to accede to the demand of the boys. It will be seen that the difference between the men and the manufacturers amounts to very little in dollars and cents, and it is probable that a settlement will be effected. There was a meeting of glass blowers last night at the hall over the old Bible House building, Fayette street, near Charles street, in secret session. A glass blower, who says he is not identified with those holding out, says that he thinks the blowers, many of them, belong to the Knights of Labor, which is a widely-spreading organization.

"Chancey Andrews, Niles, Ohio, is now paying the established price for boiling, \$5 per ton of 2240 pounds. The praise for the above is due the helpers, as they compelled the boilers to get it." The above is the old, old story of the *Labor Tribune*. When any progress is made in the condition of the members of the Amalgamated Association of Iron and Steel Workers, all the praise and credit must be given to that organization. In this instance the helpers had nothing whatever to do with advancing the prices to the boilers in the Niles Iron Co. The facts are that in October, 1878, and after the above mill had been idle a long time, the workmen proposed that the proprietors give them steady employment, and agreed to work for a little less than the regular price which is established by the Amalgamated Association of Iron and Steel Workers. The proprietors agreeing to the proposition, promised them steady work at those prices, and as soon as the prices of finished iron should advance sufficiently, to pay them the regular prices for their labor. In accordance with this agreement and without the workmen asking for it, or in any way intimating that they desired or would ask for it, the proprietors, on the 5th of August, informed their workmen that, as there was a better demand for iron and as prices had advanced, according to their agreement, they were prepared to commence paying them the regular established price for their labor. A better feeling now exists between employers and employees than at any time since the Niles Iron Co. have owned the works.

One of the most commendable moves on the part of the workingmen we have yet seen, has been made by the carpet-weavers of Philadelphia. They recently instituted measures for the formation of a joint association of carpet manufacturers and weavers, to protect the interests of both employers and employees, and establish a feeling of harmony and co-operation between them regarding the prices for labor, &c., in the future. If all the different trades could be induced to perfect similar organizations, we should hear no more of money and time wasted in strikes and lockouts. In the majority of cases strikes can be obviated by bringing about an understanding between employer and employee, which such organizations will promote naturally and easily. With direct intercourse between the manufacturer and his men, the power for mischief of the demagogues who arrogate to themselves the championship of the working classes will be greatly diminished if not entirely destroyed, and a disturbing element be rooted out. Better work will be done in the factory, and better pay be given. From every point of view, therefore, we think this movement is a praiseworthy one, and it should be encouraged and further developed.

The difficulty between the Reading Hardware Company and their Molders has been settled by an increase of 15 per cent. for the present month, to be further increased to 25 per cent. on and after the 1st of October.

The *Labor Tribune* advises the St. Louis boilers to stand by the established rule—5 heats double turn, 6 heats single turn, and not more than 10 heats in 24 hours under any circumstances.

The window glass blowers in Johnson & Co.'s works, Pittsburgh, established the card price for blowing and gathering for the ensuing year, which was an increase of 10 per cent. over last year's wages. The gatherers last year and for many years past have been getting 55 per cent. of the blowers' wages. The price fixed for the gatherers on the 1st of August was 60 per cent. of the blowers', which is an advance of more than 15 per cent. over last year's wages. This tariff was taken before the manufacturers by the president of the union and was agreed to by all. This list was to have taken effect September 1, but as Messrs. Johnson & Co. had been in operation for some time, it was decided that the date for the inauguration of the new list should be August 15, in order to take in the above firm, although it may appear that Messrs. Johnson & Co. independently advanced the blowers' wages, owing to the fact that no other window glass factory is now running nor has been for the past few months. They are now paying the price which would be uniform throughout the country next year. The reason that the works of Messrs. Johnson & Co. were the only ones that were running June and July was that the Glass Manufacturers' Association passed resolutions in January last restricting the production to 10 months this year, so that between June 15 and August 15 each establishment was obliged to suspend for 60 days. Moreover, the blowers' union passed resolutions that they would not work during July and August, so that none of the manufacturers could run during the time named even if they desired to. Messrs. Johnson & Co. were not running last year, and they are not members of the National Association. This is the only firm in Pittsburgh not members of the association. Mr. Johnson has been engaged in the window glass business for over 30 years, and it was altogether an act of good will on the part

of the blowers union in permitting them men to work in his factory. In view of the increased demand for window glass, some of the Eastern and Western firms would have started up if they could have gotten men to work, but they were unable to do this, as the union men would not go back on their word.

The strike of molders in the employ of Carr, Crowley & Devlin, malleable and gray iron workers, Philadelphia, ended on the 13th inst., by the employers granting the advance of 1/4 to 1/2 cents per mold demanded by the molders.

The *Reading Eagle* says: The iron business about Lebanon is picking up. The Weimers want molders and machinists, and have employment for at least 50 more men, and they find skilled help very scarce.

Notices were posted on the 13th inst. in the Kensington, Philadelphia, Mills announcing a general increase of wages equal to about 6 1/2 per cent. for all hands. This is the second advance within three months, the first being 10 per cent. The most significant feature of these advances lies in the fact that both were granted without any solicitation on the part of the workmen.

A strike of molders was inaugurated at the Ohio Falls Car Works, at Jeffersonville, Ind., on the 9th inst. At present only the freight department of the extensive establishment is involved. On the 8th the molders, through a committee, sent a communication to the officers of the company, asking that the price paid for molding street-car wheels be increased, and that the wages of the side-floor molders be raised from \$2 per day to \$2.25. The committee were requested to call again, by which time the officers would be ready to reply. At a second meeting, the request of wheel molders, being considered reasonable, was complied with. In the matter of the wages of the molders on the side floor, the company made a proposition that the superintendent of the works and one of the molders, to be elected by his comrades, should visit all the prominent car shops in Ohio, Indiana and Illinois, and ascertain the wages paid for similar work in those shops; that the average price found to prevail would be paid to the molders of the Ohio Falls Company, and that any change resulting from the investigation should date from September 10th. The committee reported this proposition to the molders, but they left the shop in a body without making any reply to the proposition of the officers of the company. As it was impossible to run the freight department without the foundry, it was closed, thus adding to the number of idle men. A few men were retained, to complete so much of the work as castings had been made for. The passenger shops are not affected. On the 12th the company paid off all the molders.

A general convention of miners of Western Pennsylvania will be held in Pittsburgh on Wednesday, September 24th, to consider some method for arbitration, and to establish a basis of wages. Some of the operators are anxious to confer with the miners, and the convention will appoint a conference committee to meet a similar committee of operators on Thursday, September 25th.

The white coal heavers employed by a Chicago firm struck because 50 negroes were put to work with them.

Nearly 500 miners at Mineville, N. Y., near Port Henry, went out on a strike on the 8 inst. and demanded 50 cents per day advance. Everything is quiet thus far.

The Indianapolis Rolling Mill Company, Ind., advanced the wages of men working by the ton on September 1st over 10 per cent. Some of them were dissatisfied and kept the mill from work three weeks. The company then put in new men in place of the dissatisfied ones, and they are now running smoothly night and day.

Displays at the Cincinnati Exposition.—The Cincinnati Exposition, since its opening on the 10th instant, has had a daily increase of visitors. All the railroads leading to the city are bringing in full trains of passengers at very reduced round-trip rates. Many new articles of manufacture in which iron and steel are chiefly employed are on exhibition, and the various departments, machinery, hardware specialties, stoves, stoveware, as well as iron ores, pig and bar iron and agricultural steels and irons, being fully represented. The display of specimens of iron and iron ores is varied and of much interest. Among others, Matthew Addy & Co. exhibit a large and very fine collection of specimens of iron and other ores, coal and coke and pig iron of various kinds and qualities, from the mines and furnaces which they represent. Messrs. Traber & Aubrey and Messrs. Pluemer & Brummell have a display similar in character, while Mr. L. E. Warner (Cincinnati) shows specimens of the Shelby Furnace (Alabama) charcoal irons, with some fine wire and other goods, including very fine specimens of car-wheel iron made from mixtures from the same furnace. Several of the departments are lighted at night by the "Brush" electric machine, driven by an engine built by the Lane & Bodley Company.

New Gold Fields in Tasmania.—New gold fields have been discovered in Tasmania. At least so says the *Melbourne Argus*, on the authority of its Launceston correspondent, who announces the advent in his city of a man with 70 ounces of gold, obtained on the Pieman River, west coast of Tasmania, and the prompt departure from Launceston of a large number of diggers, bound for the new workings. These men have embarked in a coasting steamer which will convey them to Pieman River, whence they tramp it for 70 miles through the bush to the locality that has proved so productive of the precious metal. A vessel named the *Little Maud*, which arrived at Circular Head on the 23d of last May, brought the news that a party of three men were "realizing" an ounce and a half of gold per diem at the new diggings. This intelligence naturally caused considerable excitement in Melbourne, whence it appears to have been telegraphed to all parts of the Australian Continent. The population of Tasmania may be expected to increase with extraordinary rapidity should further exploration and experiment confirm the statements of the lucky diggers who have already come into Launceston with their treasure.

The Iron Age

AND
Metallurgical Review.

New York, Thursday, September 18, 1879.

DAVID WILLIAMS . . . Publisher and Proprietor.
JAMES C. BAYLES . . . Editor.
JOHN S. KING . . . Business Manager.

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The death is announced by cable of Bern-
hard von Cotta, an eminent mining engineer
and geologist, whose writings have made
him familiar to the general public as well as
to the profession. Many who now rank
high as mining engineers in this country,
have been guided in their first studies by
Professor von Cotta, who for a whole genera-
tion taught at the famous Freiberg School
of Mines. He was born on the 24th of
October, 1808, in Thuringia; entered the
School of Mines as a student in 1827, and
was appointed a professor in 1832. Besides
long and faithful work as an instructor,
Cotta was active in the field. He explored
and examined, in connection with the
famous mineralogist Naumann, the geology
of his native country, Saxony, as a
prominent member of the Royal survey,
and he contributed largely to the map-
ping work connected with it. As a care-
ful and original investigator he added
much to the rapidly accumulating store
of geological knowledge, and some of his
best efforts were devoted to a wide dis-
semination of the results of contempora-
neous research in this field. It is this por-
tion of his labors that has made his name

well known among the educated classes in
Germany. The grace and ease of his style
made his books attractive, and rendered him
pre-eminently able to popularize geological
truths and theories. Some of his works have
been translated, and have met with deserved
success. His standard book: "Treatise on
Ore Deposits," which has been made accessible
by Prof. Prime's translation, may serve as a
good example of the industry, originality
and conscientiousness which he brought to
bear upon all matters that he undertook.
The Freiberg School has lost in him one of
the veterans whose fame attracted students
from all parts of the globe, and if we are to
believe recent reports, the increased ex-
cellence of our own colleges, and the declin-
ing fame of the renowned German academy,
is telling seriously upon the numbers who go
abroad to study the first principles of min-
ing and metallurgy.

Conditions Affecting the Advance in Iron in the West.

If the West was lagging in taking ad-
vantage of the situation to advance prices on
merchant iron, it certainly cannot be charged
with any slowness in this respect since it
has started in earnest. Within three
weeks the card rate on iron has advanced
1/2 cent per pound, or \$10 a net ton. The
first advance to 2.30 cents from 2 cents was
informal, and the result of a general belief
that the market would bear it. The advance
to 2.50 cents was made by the Western Iron
Association at its meeting on August 28th.
Of course, the selling price for large lots is
somewhat below this, but it is true that some
sales, in cases where the iron must be had at
once, have been made at only one-tenth off.
Another good indication is that the card of
extras is being adhered to. There is none
of that cutting of classification that has been
so common in the past five years. No doubt
an order for all extras could be placed a
little lower than one for all bars, but it
would not be by a cutting off of the classifica-
tion. It would be sold on a given basis all
round.

The preliminary slowness and the very
rapid advance since it began, while at first
blush they may seem surprising, will not be
so if the peculiarities of the Western mar-
ket are remembered. Its market for raw
materials—ore especially—is fixed in the
spring for the whole year. Drawing its
supplies from Lake Superior, those supplies
are brought to the lower lakes in the sum-
mer months and piled on the docks, though
the shipments from the docks may continue
the whole year. The ore companies have
pursued the policy of bringing down only
what was contracted for. The prices are
fixed for this early in the season. Now, any
advance in the market for merchant iron
early this year would have unsettled and
probably stiffened the ore market more
than it was advanced; and, consciously or
unconsciously, the Western manufacturers
fought against this. Now that virtually all
the ore that can be contracted for has been
bought, there is nothing to be gained by
retarding the advance of the merchant iron
market.

A somewhat similar state of affairs rules
in the pig-iron market. Most of the large
Western mills have considerable stocks of
pig on hand or contracts out. They opposed
any advance until they had bought their
stocks. Now that they are bought, they
stand aside and allow the advance.

The labor question has been an element
on the bear side of the market. Prices are
fixed on the 1st of June for a year. Had
iron begun to advance the middle of May as
it did the middle of June, the settlement of
prices for the coming year would have been
a more difficult subject than it proved to be.

There is some difference of opinion as to
the future of prices. The best informed of
the Western manufacturers are not inclined
to advance the card beyond \$2.50. Several
reasons guide them in this determination.
In the first place, in view of what or-
ders are already booked, it is not believed
that the market will stand above \$2.50,
and any attempt to put it above this will
hurt the market. So far, every advance
that has been made has been maintained,
and it would be very harmful to get a set-
back. Another reason is that an advance
above \$2.50 would unsettle wages. These
are for skilled labor on a basis of \$2.50
card. An advance above this, if it was not
sustained, would compel the manufacturers
either to reduce their card or to continue
paying wages on a higher basis, either of
which would be injurious. There seems an
inclination, for these reasons, to keep iron
at \$2.50 card. Of course, if it can safely
be advanced beyond this, it will be, for if
iron will bring \$2.75 or \$3, the manu-
facturers can afford to pay the advanced
wages that will be demanded.

The great tin-plate trade of Wales, which
has been struggling hard against adversity
for a number of years, is threatened, in at
least one of its branches, with a serious com-
petition. The low price of mild steel and its
superior quality are now, it seems, com-
mencing to make inroads upon the territory
of the higher classes of charcoal tin plates.
We have recently examined tin plate made
of mild steel, which showed it to be equal, if
not superior, to the very best quality produced
in Wales. The plate was doubled up and
hammered on an iron anvil as close as it was
possible to fold the plate, without showing

any signs of distress where bent. We under-
stand that this material has been used for
stamping, and has given as much satisfaction
as the best charcoal plate.

British Banks at Home and Abroad.

One of the greatest factors in facilitating
the immense foreign trade of England, is
the banking machinery centering in the
metropolis and spreading to the remotest
quarters of the globe. Banks were intro-
duced in England much later than on the
Continent. In Northern Italy they existed
as early as the Crusades; in Holland they
were founded between 1607 and 1635; in
England the first bank, that of Child & Co.,
still doing business, came into existence in
1663, the Bank of England 1694, that of
Scotland 1695, the Royal Bank of Scotland
1727, and the Bank of Ireland 1783.

Up to the year 1833 no large bank on
shares was allowed to be founded in London
or within a circuit of 65 miles of it, the
Bank of England enjoying this exclusive
privilege. In 1833 this privilege was taken
away from the Bank of England, but it was
allowed to retain the exclusive privilege of
issuing notes to bearer within the said cir-
cuit. The immediate effect of this law was
the founding of joint stock banks in London
and vicinity. In 1844 Sir Robert Peel intro-
duced some further reforms, limiting the
amount of issue of bank notes to bearer, the
same limit being applied to the Bank of
England, but the latter retaining the exclu-
sive privilege of issue within the said cir-
cuit. In 1862 the limited liability act was
passed, limiting the liability of directors and
shareholders, if desired, to the amount of
capital subscribed and the amount of notes
to bearer issued.

Every such reform was followed by an
increase of banks established, not only in
England, but in Scotland and Ireland. In
1872 the joint resources of banks in the
United Kingdom amounted to the enormous
sum of \$3,080,000,000. In February last
the English banks alone held deposits to the
amount of \$2,000,000,000; in April the Bank
of England held \$191,200,000. May 1 it
was estimated that the joint resources of
English banks and the savings banks in
Great Britain and the colonies, represented
\$4,200,000,000. That under cover of this
colossal increase a great deal of corrupt
banking should gradually have grown up in
some localities, need surprise nobody; and
the failure of the City of Glasgow Bank,
the Caledonian Bank Company and others,
revealed this recently. Accommodation
had been stretched to the utmost, the decline
in the value of mines and real estate de-
preciated the intrinsic value of mortgages,
and disaster followed in a few localities,
without, however, spreading any further.

The great inherent strength of the British
banking system lies in the safeguards which
surround it, and in the magnitude of the
joint deposits made by the people. It further-
more lies in the vigor and ever renewed in-
flux of capital flowing into the British banks
from all quarters, by virtue of an immense
trade, embracing the commercial transac-
tions not only of Great Britain, but nine-
tenths of the foreign trade of all other civil-
ized nations, the bills drawn abroad being
easiest negotiable on London. Thus the
bulk of products we draw from Brazil and
the extreme East is paid by drafts on Lon-
don, bills on New York hardly being nego-
tiable beyond Cuba and Venezuela. To be
thus tributary to the English necessarily in-
volves commissions and other profits, all ac-
cruing to them alone. Nor is there much of
a prospect that the world will emancipate
itself from the English banking system with-
in this century, the machinery being too
complete and apparently suiting all mer-
chants and bankers, if we except the
French, who are now making a strenuous
effort to cut loose from it. We Americans
have not begun to do so, despite the large
banking capital concentrated at New York
and Boston. In this movement, to substi-
tute Paris for London, at least so far as
French transatlantic trade is concerned,
France is mainly represented by the follow-
ing Parisian banks:

Société Générale	\$24,000,000
Dépôts et Comptes Courants	16,000,000
Société Financière	24,000,000
Comptoir d'Escompte	16,000,000
Crédit Lyonnais	30,000,000
Total	\$100,000,000

The English banking system beyond the
seas may be summed up as follows:

FOREIGN AND BRITISH COLONIAL JOINT STOCK BANKS.

I.—Banks of India and China.

Leading Banks.	Branches.	Capital and Reserves.
Oriental Bank Corporation	15	\$10,000,000
Agra Bank	8	5,000,000
Mercantile Bank of India, China and London	15	4,400,000
Chartered Bank of India, Australia and China	31	4,600,000
Delhi and London Bank	4	2,000,000
Hong Kong and Shanghai Bank- ing Corporation	16	8,800,000
National Bank of India	11	5,000,000

Seven banks with..... \$32,800,000

II.—Banks of Australasia and British North America.

Leading Banks.	Branches.	Capital and Reserves.
Bank of Australia	61	\$3,000,000
Union Bank of Australia	45	8,400,000
National Bank of Australasia	81	5,000,000
Bank of New South Wales	124	5,000,000
Bank of New Zealand	83	5,000,000
Bank of Victoria	71	3,000,000
Bank of British North America	17	6,000,000
Bank of Montreal	31	17,500,000
Merchants' Bank of Canada	40	7,000,000
Commercial Bank of Canada	59	3,300,000

Eleven banks with..... \$71,800,000

III.—Banks in Non-Colonial Countries and in Africa.

Leading Banks.	Branches.	Capital and Reserves.
Bank of Rio de Janeiro	31	\$3,400,000
Mexico and South America	27	1,500,000

London and San Francisco Bank	..	3,400,000
" " River Plate Bank...	4	3,500,000
New London and Brazilian Bank.	7	2,500,000
Standard Bank of British South Africa.....	37	3,800,000

Six banks with..... \$28,200,000
And 30 smaller banks in above countries
and on the Continent of Europe, as
well as in Egypt..... \$30,000,000

Recapitulation.	Banks.	Capital and reserves.
India and China.....	7	\$39,200,000
Australia and British North America.....	11	71,800,000
South America and Africa.....	5	18,100,000
Continent of Europe & Egypt, &c	30	30,900,000

The business done by most of these British
banks beyond the seas is of a very profitable
kind. They buy commercial drafts, with or
without documents, and sell their own drafts
to the colonial authorities and large and
small importers. They allow a moderate
interest on deposits and charge a larger one
on good security, such as merchandise, im-
proved real estate, &c. The recent failure
of one of the Australian banks shows, how-
ever, that the loaning of money on real es-
tate in new countries at times proves disas-
trous to some of these banks; but we hear
so seldom of failures among British banks
abroad that the inference is that, on the
whole, they are well managed.

At all events, they all help to foster Brit-
ish trade, and form one of the great elements
which furnish the English enormous advan-
tages over other nations. The aggregate
average profits annually flowing into Eng-
lish pockets from this vast network of trans-
atlantic banks, no doubt amount to many
millions of dollars.

Our object in placing before our readers
a picture of this extensive financial machin-
ery, is to point out to them the fact that,
sooner or later, New York and Boston will
find themselves obliged to follow the ex-
ample of the French, and at least make an
effort to secure emancipation from London.
Before we returned to the gold basis this
was absolutely impossible beyond Cuba;
with gold at par, all that has to be done is
for some of our large banking concerns to
open branches in those countries with which
our trade expands rapidly, and to keep
these branches under strict rules as to the
nature of their dealings. Managed by cap-
able men, they will prove both safe and
profitable.

The Taxation of Commercial Travelers in Texas.

The instructions issued from the office of
the Controller of the State of Texas with
regard to the taxation of commercial
travelers, were lately discussed in these
columns and led to many inquiries. The
full text of the Controller's circular is as
follows:

CONTROLLER'S OFFICE,
AUSTIN, July 21, 1879.

Instructions relating to commercial travelers,
drummers, salesmen, &c.:

1. The annual occupation tax for drummers,
commercial agents, solicitors of trade, &c., is \$200.

2. Payment of this tax must be made at the
Controller's office.

3. Payment must be made in advance for the
entire year.

4. Any drummer, &c., paying this tax as his
personal occupation tax, can solicit trade for as many
houses as he desires to represent.

5. Drummers for original actual manufacturing
establishments, located in or out of this State, are
not required to pay an occupation tax. Any man-
ufacturer, however, desiring to engage drummers
in his State, must send an affidavit to this office,
signed by the president or proprietor, said affi-
davit made before some officer, with a seal; which
affidavit must state that said company or prop-
rietor is an original actual manufacturer, and
that the same is represented by the parties named
in said affidavit, who are the authorized agents;
and that all the goods or articles so represented
are manufactured by said company or proprietor,
and are not bought from any other person. Said
affidavit shall give the names of the drummers,
agents, &c., and permits will be issued at this
office for each of said drummers.

6. Merchants in or out of this State, on payment
of the annual tax of \$200 as merchants, said pay-
ment to be made in advance at this office, will
be authorized to have as many drummers in
this State as they desire, without said drummers
being required to pay occupation tax. Application
by merchants for permits to drummers will be sent
to the office at the time of payment of the \$200
tax, said application to state the character of busi-
ness, and names of drummers, solicitors of trade,
or salesmen employed.

Drummers holding permits under this last in-
struction will not be authorized to act for any
other merchants; and any drummers holding per-
mits for merchants, and engaging for other mer-
chants, will be held to payment of the personal
annual tax of \$200.

7. The law referring to drummers takes effect
on September 1, 1879. W. A. PERRY, Chief Clerk,
Acting Controller.

In the abstract of the above originally
furnished us the language was much less
specific, and it was uncertain whether
travelers representing manufacturers and
carrying no other samples than those of the
manufacturers employing them, were or
were not required to pay the occupation tax.
Our informers on this point secured us a copy
of the circular in full, but with additional in-
formation that section 5 had been rescinded.
The following is the latest official utterance
emanating from the controller's office:

CONTROLLER'S OFFICE,
AUSTIN, TEXAS, August 5, 1879.

1. The ruling relating to occupation tax on drum-
mers representing the houses of original manu-
facturers, published in circular from this office,
dated July 21, 1879, paragraph 5, is hereby re-
scinded.

2. Drummers representing the proprietors of
original manufacturing establishments, mechan-
ical or otherwise, are required to pay the annual
occupation tax under the same rules as other
drummers.

3. Applications for drummer's license to be made
to this office, stating time when license is to com-
mence, accompanied by \$200 remittance.

W. A. PERRY, Chief Clerk,
Acting Controller.

This is substantially what we understood
to be the meaning and intent of the law at

the time we commented upon it in our
editorial remarks of August 21. The law is,
as we said, a drag-net intended to catch
everything in the mercantile line. It is un-
necessary to say anything in addition to
what we said at that time, except to call at-
tention to the lack of dignity shown in the
framing of the papers above given. The
term "drummer" is, at best, a slang term
which has the doubtful sanction of colloquial
commercial usage. Its incorporation in an
official document as a term to describe
what is better described by the terms
"commercial traveler" and "solicitors of
trade," is a vulgarity, in that it adds to
injury what is intended to be insult. We
wish it were possible for manufacturers
and merchants in other States to keep away
from Texas altogether until this foolish law
is repealed, but we presume that a majority
of those affected will pay the tax and swal-
low the indignity. The advantage resulting
to local tradesmen and consumers will be
that they will have to pay the tax them-
selves, often many times over, and that they
will lose many of the advantages which
would result from the unrestricted commer-
cial intercourse between States which the
Constitution prescribes, and which the
United States courts will, sooner or later,
enforce.

Electricity for the Transmission of Power and Generation of Heat.

A subject which has been for some time
engaging the attention of scientists, electri-
cians and engineers, has been again brought
before public notice here and in England al-
most simultaneously, through the agency of
the American Society for the Advancement
of Science at Saratoga and the Royal Associa-
tion at Sheffield. Before both institutions
the conversion of mechanical energy into
heat by electro-magnetic machines, and the
transmission of power by electricity were
brought up for discussion. At Saratoga
only one portion of the wide field upon which
investigators are entering was explored by
Prof. Barker, while at Sheffield Prof. W. E.
Ayrton, in rather a rambling manner, dis-
cussed upon the subject of "Electricity as
a Motive Power." The range of usefull-
ness which the application of electricity
opens is very large, and the ardor with
which many ingenious and eminent inventors
and scientists have sought the solution of
one of the problems at issue, electric light-
ing, has done very much to bring into prom-
inence, and aid, by an extension of our
knowledge, kindred applications of elec-
tricity to industry and the arts. Prominent
among these are its use for heating pur-
poses and for the transmission of power.
Dr. Siemens, Sir William Thompson and
others have suggested both, but in one case,
at least, have not been particularly fortunate
in their examples and illustrations, as the
famous idea of utilizing the power of the
Niagara Falls has shown. What is urgently
required, in order to give the transmission of
power by electricity a status, is a series of
careful experiments showing the exact loss
at varying distances, and numerous other
details which may serve as a basis for the
practical engineer in the estimation of its
value when compared with other methods.
Although no such data have yet been given
to the public, the subject is evidently one which
deserves close attention, as numerous in-
stances will occur to every engineer in which
the transmission and distribution of power
by a simple wire or cable might have been
of extreme utility.

Little has transpired of the attempts made
in this direction hitherto, beyond a meager
notice of some experiments made at An-
sonia, and a description in the *Revue In-
dustrielle* of trials made at Sermaize,
France, to transmit the power of an engine
for some hundred yards for plowing a field.
Briefly, the system is this: A dynamo-
electric machine is run at some convenient
point by the engine supplying the power to be
transmitted to another place. The electrici-
ty thus generated is conveyed by wires,
cables or metallic tubes to a dynamo-electric
machine in which the current of electricity,
by a reversed action, is made to rotate
shafting carrying the armature, so that all
that is necessary to transmit the power are
two machines and a connecting cable, which
take the place of the appliances ordinarily
in use of belting, wire rope, compressed air,
&c. Prof. Ayrton, in the lecture above re-
ferred to, states that the most efficient means
is to use generators and motors of high
electro-motive force, in order to reduce the
loss in transmission, which varies with the
length, the diameter and the material of
which the wire or cable is made. He
claims that with the present improved
dynamo-electric machines this loss would not
exceed 30 per cent., and points out that
with an increase of speed beyond that gen-
erally attained at present—700 revolutions
per minute—the electro-motive force would
be greater. He advises, accordingly, that the
direction in which experiments should first
be made ought to be to increase the speed of
rotation of the generator and attach light
loads to the motor, revolving at high speed.
Prof. Ayrton, starting from the idea that it
costs much less to run one or a few large
steam engines than a multitude of small
ones, looks forward to great economy in the
use of power by the establishment of great
central steam engines, from which power is
transmitted to numerous uses by means of
electricity. But the methods which he
adopts to impress his audience are by no
means such as to command the attention of

men who reason calmly. He disposes in the most summary and unwarranted way of the question of economy, by generally assuming that the cost of lighting, of producing motive power, of heating metals and the houses of Sheffield should all and singly be "halved." By this simple and expeditious method he arrives at the dazzling result that Sheffield would save \$2,000,000 per annum. We are unwilling to follow Prof. Ayrton in his discussion of the other advantages which, according to him, would accrue to the grimy city by the introduction of electricity for a variety of uses. We would take this occasion to protest against any such loose figuring as that by which he has marred, and perhaps destroyed, work that might otherwise be beneficial. A repetition of the experiences had with the electric light is not desirable. The time for generalities has passed, and the public now look forward to facts and figures based upon well-conducted experiments.

NEW PUBLICATIONS.

Mr. Geo. H. Frost, the proprietor of *Engineering News*, is just bringing out a work which will be of great interest to all who have anything to do with the steam engine. The work is entitled "A Practical Treatise on the Steam Engine," by Arthur Rigg, M. E., with additions showing the latest and best American practice. This work has a high reputation upon the other side of the Atlantic. It will be remembered that Mr. Rigg prepared a great proportion of the Centennial reports upon steam engineering, which were published in *Engineering*. His writings upon this subject have been of the highest value. The scope of the work will only include fixed engines, no attention being paid to the larger departments of locomotive and marine engines. The original treatise is very exhaustive, and examples of all the types of the best modern practice are given; but in order to render the work still more complete, a large amount of new matter relating to the latest and best American practice will be inserted, together with detailed drawings of engines, &c. It is the intention of the publisher to present to manufacturers the most practical treatise upon the steam engine that has yet appeared in the English language. The work in its enlarged and improved form will appear in the columns of *Engineering News*, the first number being published in the issue of Sept. 13. When completed it will be issued in book form. We are very glad that this work has been undertaken by Mr. Frost. Just such a book has long been needed, and the high price of the English edition (\$17) has entirely shut it out from circulation in this country. In the serial form, as it appears from week to week, it will cost only \$3. The price bound, we think, has not yet been announced.

SCIENTIFIC HORSESHOEING. By William Russell. Robert Clarke & Co., Cincinnati. Price \$1.
Mr. Russell, who, it appears, is a practicing farrier of much experience and success, has in the book before us carefully gone into the scientific and practical details of his trade. He minutely examines the anatomy of the hoof of the horse in its normal condition, and in the many forms of disease and crippling to which it is liable. He seeks the causes, suggests the preventives and points out the cures which he has had occasion to learn and to test by long experience. To that large branch of the iron trade, the manufacturers and dealers in horse shoes, his treatise will be valuable and probably suggestive.

Mississippi Navigation.

Contracts have recently been signed for the construction of several fast mail steamers to ply on the Mississippi River between St. Louis and New Orleans. It is probable that the former city furnishes the capital for building these steamers, and the near future is likely to afford abundant opportunity for further investments of a similar character. If Capt. Eads' work at the mouth of the Mississippi has, as is claimed, supplied a permanent channel deep enough for the largest vessels engaged in ocean commerce, the demand for transportation services upon that river must soon be very great, quite surpassing what is required for the present traffic. Should one or more lines of steamers be established between New Orleans and Liverpool, as is fondly predicted by the friends of the jetty scheme, St. Louis would gain immensely in commercial importance. She ought to become the great central distributing point of the West for foreign imports, and if her merchants are enterprising, she will not allow that substantial honor to escape her. The interests of the whole West demand that the ships that carry its wheat and beef and pork to Europe shall not be obliged to return to New Orleans in ballast. If St. Louis bestirs herself, goods that are now shipped to this port, and from here go by rail to all points in the West and Northwest, will hereafter be carried by the cheaper water routes almost to their destination. The effect upon St. Louis of diverting both the import and export trade of the West into this new channel would be marvelous, and it would be shared, though in a less degree, by many other cities upon the Mississippi, the Missouri and the Ohio. New Orleans, as the port of entry, would also be largely benefited, but her present Quarantine laws must be modified before she can reap her full share of profit. Her peculiar susceptibility to infection by yellow fever puts her at a great disadvantage, commercially, and it is not easy to see how she can escape the penalties of her unhealthy situation. The plan of putting up elevators and supplying other port facilities at Eadsport, some distance below the city, and beyond the reach of her Quarantine laws, has found some favor, but that seems to leave New Orleans quite out in the cold. The problem of how to make the city a healthy port twelve months in the year may stimulate her physicians and health officers to devise some methods of permanently suppressing yellow fever.

A Nation Without Iron.—Mr. A. Woolkoff, in a narrative of his travels in Yucatan and the southeastern states of Mexico, pub-

lished in Peterman's Mittheilungen, introduces us to a so-called "civilized" people, who are practically unacquainted with the uses of iron. Writing about the northern portion of the State of Chiapas, he says that the inhabitants employ iron only in the shape of axes and machetes, which are imported from the United States. For the distance of 100 kilometers round about Palenque not one blacksmith is to be found. Not a single nail is to be seen in their houses; everything is held together with cords or with vines. Even in the preparation of their usual article of food—tortillas—the apparatus they employ is equally primitive, though in this respect they follow the custom which is universal throughout all Mexico and Central America. The grains of maize are crushed between two stones, one of which, the nether one, is rather large, with a sloping upper surface. A woman kneels by this stone and strews upon it some grains of maize, over which she works to and fro another stone of cylindrical form, so grinding the maize. The coarse meal so obtained is baked into flat tortilla-cakes in the ashes. This is exactly the mode of preparing meal in vogue in Central and South Africa; the African negroes, however, show a higher grade of culture, inasmuch as they understand the working of iron. Our author caustically remarks hereupon that "the introduction even of hand-mills would be, for this country, a step of progress of far more value than many a high-sounding political prerogative, which can never be of any advantage to a population living in so low a grade of civilization."

Report of the United States Testing Board on the Properties of Wrought Iron and of Chain Cables.

A volume has recently been issued by the government printing office (45th Congress, 2d session, H. R. Ex. Doc. No. 98) containing the first installment of the reports of the United States Board appointed to test iron, steel, &c. It contains two reports: First, that of the three committees of the Board on chain cables, on malleable iron, and on reheating and re-rolling wrought iron; and second, that of the committee on metallic alloys, containing an account of only a portion of its work, viz: that upon the copper-tin alloys. Both of these reports are destined to become standard works of reference upon the subjects of which they treat. Although the board has had such a short life—less than three years—and although not a single test was ever made on the testing machine built for it, it has given to the world the results of the most extensive and satisfactory research upon the mechanical properties of wrought iron and of the copper-tin alloys that has ever been made.

But a limited number of copies of the volume have been printed by the government, and it will not be accessible to the great majority of manufacturers, engineers and others who will be most interested in its contents. We have, therefore, prepared careful abstracts of these reports, the first portion of which we begin below. Care has been taken to include in these condensations all the valuable conclusions, with all necessary information in regard to the character of the experiments made, while nearly all the tables of figures and less important details have been omitted, so as to bring the reports into the smallest compass. The exact language of the reports has been used, except in some sentences in which the abridgment made necessary a few unimportant changes.

REPORT OF THE RESULTS OF INVESTIGATIONS MADE BY COMMITTEES D, H AND M OF THE UNITED STATES BOARD APPOINTED TO TEST IRON, STEEL AND OTHER METALS.

The investigations assigned to the three committees designated by the letters D, H and M, were as follows:

To Committee D, "On Chain and Wire Ropes," with instructions "to determine the character of iron best adapted for chain cables, the best form and proportions of link, and the qualities of metal used in the manufacture of iron and steel wire rope."

To Committee H, "On Iron, Malleable," with instructions "to examine and report upon the mechanical and physical properties of wrought iron."

To Committee M, "On Reheating and Re-rolling," with instructions "to examine and report upon the effects of reheating and re-rolling, or otherwise of reworking, of hammering, as compared with rolling, and of annealing the metals."

The work thus assigned to three different committees was of such a nature that it was considered advisable, in order to economize time, labor and means, by the avoidance of duplication of expensive experiments, to consolidate the committees and to conduct the investigations in such a manner that a single report would cover the whole ground. In thus concentrating the work, it was necessary that a leading object should be selected, and it was considered that the research which would be required to establish the characteristics of iron which would prove best adapted for the manufacture of cables, would furnish data which would bear more or less upon the subjects to be investigated by Committees H and M, while it would be quite practicable to select from the wide field presented by "wrought iron," and differences in methods of treating it, and number of lines of research, none of which would prove of much service in establishing results in regard to chain-iron experiments; therefore, have all been carried out so that while to obtain data, both as to the mechanical and physical properties of wrought iron, and as to the effects of different methods of treatment of the raw material, all have been made to contribute their quota toward the establishment of methods by which an iron could be judged correctly as to its adaptability for chain cable manufacture.

The cable-link is but a modification of the round rolled bar, and its qualities must depend upon those of the bar from which it is made. Therefore, we have selected the round bar as the foundation of our work, and our endeavor has been to ascertain what qualities should be inherent in it, and which would remain without deterioration through various processes incident to the manufacture from it of finished products of other forms,

THE BAR.

Our plan of investigation was to first ascertain, by means of tension-tests made upon bars of such iron as we could procure, the amount of strength, elasticity, &c., which would be found to exist in ordinary American bar iron; next by tests by impact upon the same iron, to ascertain their relative power to resist sudden strains; and finally, having ascertained these essential points in the material, to make from each iron a number of cable links, and by tension to find their strength and uniformity and the degree of dependence to be placed upon the welds.

To carry out these investigations, we procured bars of round iron of sizes such as are usually used in the manufacture of cables, viz., from 2-inch diameter to 1 inch, from the following manufacturers and dealers: Burden & Sons, of New York; Bentoni, of Pennsylvania; Burgess, of Ohio; Catasauqua, of Pennsylvania; New Jersey Iron and Steel Company, of New Jersey; Niles Iron Company, of Ohio; Phoenix, of Pennsylvania; Pemberton, of Massachusetts; Pencoyd, of Pennsylvania; Tredegar, of Virginia; Trego & Thompson, of Maryland; Sligo, of Pennsylvania; Tamaqua, of Pennsylvania; Wyeth Brothers, of Maryland, and many other bars of unknown origin.

The experiments upon the results of which our report is based comprise the details of all physical phenomena observed by us while testing to destruction nearly 2000 bar test-pieces, by the strain of tension, over 1500 by the strain of percussion, and nearly 500 cable links made in all respects as for service.

The tension-tests upon bars were made both upon bars in their normal condition and upon others from which a portion of the surface had been turned away. Those by impact were made upon portions of the same bars which had been tested by tension, and those upon chain-links from other portions of the same bars.

ACTUAL STRENGTH, AND STRENGTH AND ELASTIC LIMIT, PER SQUARE INCH OF 959 BARS OF ROUND IRON.

In the following table the stresses by tension required to rupture many of the bars we have tested are arranged in their relative order, the greatest stress required being given precedence upon each size.

In the columns where stress is reduced to the square inch, the area corresponding to the actual diameter of the bars has been used. This gives a more correct estimate of the relative order of tenacity than the first column, in which bars frequently gain or lose in precedence on account of excess or lack of material, some being rolled "full" and others "scant."

In the column "Standard for size," the strength we have found best adapted for cable iron is placed for comparison.

The elastic limit as given is not from perfectly accurate data; it is simply the amount of stress which produced the first perceptible change of form divided by the bar's area.

CONDENSED TABLE.				
Size of bar, in.	No. of tests	Strength.		Standard for size, lbs.
		Original Area, lbs.	Per sq. inch, lbs.	
1/2	1	2,920	50,885	45,665
3/4	3	5,886	54,090	49,680
1	4	12,311	62,700	59,126
1 1/4	4	11,490	49,841	51,145
1 1/2	26	17,644	57,660	59,126
1 3/4	4	15,588	52,050	59,126
2	4	30,850	50,630	59,126
2 1/4	49	48,480	61,777	59,126
2 1/2	37	60,056	60,458	59,126
2 3/4	37	49,660	52,267	59,126
3	9	128,000	52,481	59,126
3 1/4	98	61,400	50,040	59,126
3 1/2	146	74,427	51,518	59,126
3 3/4	146	72,400	50,594	59,126
4	9	86,300	53,515	59,126
4 1/4	215	102,125	57,052	59,126
4 1/2	54	110,000	56,244	59,126
4 3/4	54	101,700	49,030	59,126
5	111	130,000	56,095	59,126
5 1/4	41	111,400	52,841	59,126
5 1/2	41	139,300	57,874	59,126
5 3/4	9	118,900	49,718	59,126
6	9	143,650	57,377	59,126
6 1/4	9	125,900	49,043	59,126
6 1/2	36	154,000	55,863	59,126
6 3/4	4	120,000	47,970	59,126
7	4	195,000	51,707	59,126
7 1/4	47	194,800	51,244	59,126
7 1/2	47	142,100	45,155	59,126
7 3/4	3	176,000	49,458	59,126
8	3	184,600	56,481	59,126
8 1/4	2	184,700	56,266	59,126
8 1/2	11	210,400	51,520	59,126
8 3/4	7	275,800	57,348	59,126
9	7	275,800	57,348	59,126
9 1/4	3	337,600	47,704	59,126
9 1/2	2	390,019	47,014	59,126
9 3/4	2	450,101	51,005	59,126
10	2	515,473	46,507	59,126
10 1/4	2	582,100	46,324	59,126

INVESTIGATION OF THE EFFECT OF DIFFERENCES IN THE AMOUNT OF REDUCTION BY THE ROLLS.

In procuring material upon which to make tests by tension, both in the bar and link form, our custom was to purchase from manufacturers at least one bar of each size ordinarily used in chain cables. Testing these bars in their normal condition by tension, it became evident that the strength of the different sizes was not in proportion to their areas; but that, on the contrary, there existed a variation in proportional strength which was in accord with variations in the diameter of the bars. In general terms it was found that as the diameter of the bar became less, the strength per square inch increased; but in comparing the results obtained from a number of such sets of bars, it became evident that the increase of strength from between the two extremes of say, 2-inch and 1-inch, was not created by a series of uniform steps upon each successive reduction, but that there was one point in the reductions where a decrease took the place of the usual increase, and that from this point the increase again began, and generally by more rapid steps. Thus the 2-inch bar was of less strength than the 1 1/2 inch; it of less than the 1 1/4 inch, which was in turn less than the 1 1/2 inch, but the strength of the 1 1/2 inch was greater than that of the 1 1/4 inch; the 1 1/4 inch, 1 1/2 inch, and sometimes the 1-inch, being each of increased strength in the order given.

We found that with a set of bars of the above sizes the difference in proportional strength between the extremes was from 4000 to 6000 pounds; that the tenacity of the 1 1/2-inch exceeded that of the 2-inch

from 2000 to 3000 pounds, and that of the 1 1/2 inch from 1000 to 3000 pounds.

Experiments at the testing machine afforded no indications by which we could determine anything in regard to the causes of these variations. We therefore undertook to watch all of the processes connected with the manufacture of a "set of bars," in hopes that while so doing we should be able to detect the hidden reason. The set comprised bars of all sizes, ranging by one-eighth of an inch from 4-inch diameter to 1/2-inch diameter. The iron was very carefully heated and received a very uniform number of passes through the rolls.

The dimensions of the piles, the proportion borne by the areas of the resultant bars, and the tensile strength and elastic limit per square inch of the bars, as found by tests made upon them entire and upon cylinders turned from the cores, are given in the following table:

COMPARISONS OF THE REDUCTIONS BY THE ROLLS WITH THE EFFECTS UPON TENACITY AND ELASTIC LIMIT.

Size of bar, in.	Area of pile, in. sq.	Area of bar in per cent. of area of pile, per cent.	Tensile strength.		Elastic limit.	
			Entire bar, Pounds.	Core, Pounds.	Entire bar, Pounds.	Core, Pounds.
4	80	15.70	46,322	46,322	23,430	23,430
3 1/2	80	13.80	46,369	46,369	23,430	23,430
3	80	12.03	47,000	47,000	24,591	24,591
2 1/2	80	10.37	47,014	47,014	24,591	24,591
2	80	8.83	47,761	47,761	26,400	26,400
1 1/2	80	7.49	47,466	47,466	26,431	26,431
1 1/4	80	6.13	47,244	47,468	29,041	29,041
1 1/2	72	5.59	48,505	49,200	31,267	31,267
1 3/4	72	4.36	47,872	48,800	35,864	31,892
1 1/2	36	7.67	49,744	49,370	35,615	37,042
1 1/4	36	6.68	50,547	48,729	38,022	38,022
1 1/2	36	5.76	50,529	49,144	35,394	34,208
1 1/4	36	4.90	50,800	51,838	5,087	36,467
1 1/2	36	4.19	58,339	48,819	39,103	39,103
1 1/4	36	3.59	58,789	49,301	40,534	40,534
1 1/2	25	3.95	50,140	50,530	35,493	37,771
1 1/4	25	3.14	51,921	51,128	39,066	38,595
1 1/2	12 1/2	4.91	50,716	50,374	33,931	33,931
1 1/4	12 1/2	3.80	50,673	50,290	33,933	35,933
1 1/2	12 1/2	3.00	58,997	51,431	34,450	34,450
1 1/4	9	2.17	58,275	52,775	38,445	39,186
1 1/2	9	1.68	54,098	54,108	38,475	40,008
1 1/4	9	1.60	57,000	59,585	40,881	40,881

A study of the table shows, first, that upon the nine successively decreasing sizes, viz., 4 to 2 inches, there was but one exception to a constant rise in tenacity accompanying the increase of reduction by the rolls, and that the elastic limit rose upon each successive step with two exceptions, which are very slight, it falling off 350 pounds in one instance and 67 pounds in another, the tenacity of the 2 inches (4.36 per cent. of pile) being over that of 4 inches (15.70 per cent. of pile) 1105 pounds, and the elastic limit 8,462 pounds.

From 1 1/2 inches (7.67 per cent. of pile) to 1 1/4 inches (6.68 per cent. of pile) the iron was somewhat irregular, and there was but a slight rise in tenacity, viz., 431 pounds, but in the elastic limit the rise was 4993 pounds.

The tenacity of the 7/8-inch (4.91 per cent. of pile) was but 104 pounds greater than that of 1 1/2 inches (4.36 per cent. of pile) that of 3/4 inch (25.00 per cent. of pile) nearly corresponding with that of 1 1/2 inches (4.12 per cent. of pile).

The effect of reduction was most marked on the smaller sizes, the 1/2 inch (2.17 per cent. of pile) having nearly 5000 pounds less tenacity than the 1/4 inch (1.60 per cent. of pile).

As we believed that the thorough work received by all sizes put them in a condition which prevented the effect due to a slight difference in the reduction being plainly manifest, we therefore selected for another experiment the bars of a very slightly worked iron, viz., Iron N:

DIMENSIONS OF PILES, AREAS OF PILES, OF BARS IN PERCENTAGE OF THOSE OF PILES, TENACITY, ELASTIC LIMIT, ETC.

Size of bar, in.	Dimension of pile, in.	Area of pile, in. sq.	Area of bar in per cent. of area of pile, per cent.	Tensile strength, Pounds.	Elastic limit, Pounds.
2	6 x 4 1/2 x 26	27	11.63	51,848	36,461
1 1/2	6 x 4 1/2 x 21	27	7.23	54,024	35,010
1 1/4	6 x 4 1/2 x 21	27	8.90	55,018	34,283
1 1/2	5 x 4 1/2 x 16 1/2	27	7.68	56,344	35,889
1 1/4	4 x 4 1/2 x 15	15	11.78	53,520	34,690
1 1/2	4 x 4 1/2 x 13	15	10.67	54,777	35,682
1 1/4	4 x 4 1/2 x 12	15	8.18	56,478	35,251
1 1/2	4 x 3 1/2 x 16	15	6.62	56,143	32,267

The above results supplied the missing evidence with one exception; the tenacity and elastic limit increased upon each successive increase in the amount of reduction by the rolls as shown more plainly thus, where they are arranged in the order of their reduction: 1 1/2-inch (6.62 per cent. of pile), 56,543; 1 1/4-inch (7.68 per cent. of pile), 56,344; 1 1/2-inch (8.18 per cent. of pile), 56,478; 1 1/4-inch (8.90 per cent. of pile), 55,018; 1 1/2-inch (9.90 per cent. of pile), 54,277; 1 1/4-inch (10.22 per cent. of pile), 54,034; 2-inch (11.63 per cent. of pile), 51,848; 1 1/2-inch (11.78 per cent. of pile), 53,550.

The tensile strength of 2-inch bar was probably greater than recorded, the iron being so brittle that the head of test piece pulled off, and the bar could be broken by sledge blows without previous nicking. This iron, under every form of test, showed by its marked contrast with iron, F, the disadvantages which follow too little work.

The evidence submitted is of sufficient value to justify us in asserting that variations in the amount of reduction by the rolls of different bars from the same material, produce fully as much difference in their physical characteristics as is produced by differences in their chemical constitution.

In order to ascertain beyond question if the rule would work in both directions, and if, by giving to a series of bars a uniform reduction, their tenacity, &c., would prove uniform, the following experiment was made:

One of the leading manufacturers of the country, having placed the facilities of his mills, and as much material as we wished, at our service, three sets of bars were rolled, Ex. Nos. 1, 2 and 3, all of which were of the same material as iron F.

The dimensions of piles of the third set, &c., are given in the following table, to gether with the tensile strength, elastic limit, &c., of the resultant bars:

Size of bar, in.	Dimensions in piles, in.	Area of pile, in. sq.	Area of bar in per cent. of area of pile, per cent.	Tensile strength, Pounds.	Elastic limit, Pounds.
2	6 x 10	80	3.99	50,763	33,258
1 1/2	6 x 10	80	3.45	53,364	35,032
1 1/4	6 x 9	72	3.34	53,754	35,373
1 1/2	6 x 8	64	3.24	53,320	33,520
1 1/4	6 x 7	54	3.27	52,810	34,840
1 1/2	6 x 6	42	3.51	54,733	34,606
1 1/4	6 x 5	36	3.41	53,240	33,500
1 1/2	6 x 5	30	3.31	54,548	34,025
1	6 x 5	25	3.14	53,915	36,287

The pile for the 2 inch was necessarily too small, as there were no rolls in the mill which would take a larger pile. The record is, however, of value as a contrast to that of the other eight bars, the average of whose tensile strength, 53,401 pounds, and of elastic limit, 34,365 pounds, is but slightly varied from by any of the bars.

Two practical results of value may be deduced from this investigation of the action of the rolls.

The first is that as important differences exist in the proportionate strength of different-sized bars made of the same material, which are due entirely to differences in the processes by which they are manufactured, and as the elimination or reduction of such differences would necessitate such

Fusible Alloys and their Uses.—The name "fusible metal" or "fusible alloy" is given to a mixture of metals which becomes liquid at temperatures at or below the boiling point of water. There are several such mixtures known, some of which are as follows: 1. D'Arce's: Bismuth, 8; lead, 5; tin, 3 parts. This melts below 212° F. 2. Walker's: Bismuth, 8; tin, 4; lead, 5 parts; antimony, 1 part. The metals should be repeatedly melted and poured into drops until they can be well mixed previous to fusing them together. 3. Onion's: Lead, 3; tin, 2; bismuth, 5 parts. Melts at 197° F. 4. If to the latter, after removing it from the fire, one part of warm quicksilver be added, it will remain liquid at 170° F., and become a firm solid only at 140° F. 5. Another: Bismuth, 2; lead, 5; tin, 3 parts. Melts in boiling water. Nos. 1, 2, 3 and 5 are used to make toy-spoons to surprise children by their melting in hot liquors. A little mercury (as in 4) may be added to lower their melting points. Nos. 1 and 2 are specially adapted for making electrolytic molds. French electrolytic molds are made with the alloys No. 2. These alloys are also used to form pencils for writing, also as metal baths in the laboratory, or for soft soldering joints. No. 4 is also used for anatomical injections. Higher temperatures for metal baths in the laboratory may be obtained by the following mixtures: 1 part tin and 2 parts lead melt at 441.5° F.; 1 part tin and 1 part lead melt at 371.7° F.; 2 parts tin and 1 part lead melt at 340° F.; 63 parts tin and 37 parts lead melt at 344.7° F.

The Future of the Anthracite Coal Fields.—Mr. P. W. Shearer, of Pottsville, Pa., in a paper read before the American Association, called attention to the waste in anthracite mining and marketing. The work of mining anthracite coal was begun in 1820 with 565 tons; now 20,000,000 tons per annum are produced. Mr. Shearer asserted that only one third of the coal goes into consumption; two-thirds are wasted, lost in the mines and in preparation. He put the maximum product at about 50,000,000 tons per annum, and at the present rate of increase this limit will be reached in the year 1900, and in 186 years, say in the year 2065, our anthracite coal fields will be exhausted. Then we must fall back on our bituminous coal area, which reaches the enormous total of 200,000 square miles, say over 400 times the area of the anthracite. Mr. Shearer said that the competition between our several coal companies, and by them with the bituminous coal, will always keep the price moderate. He doubted if Great Britain could much increase its now enormous product of 136,000,000 tons, yet at her present rate of increase she will exhaust her coal—above 4000 feet—in about the time in which our anthracite output will cease. But she has no 200,000 square miles, as we have in the West.

English exchanges state that Messrs. Bolckow, Vaughan & Co., of Middlesbrough, have now got the Thomas-Gilchrist process into regular practical working, and that more than one-half of their converters are supplied with pig made from local ore. Two of the converters at Esten are working with Cleveland pig, making the steel for an order of 2000 tons of rails for the Northeastern Railway Company, to whom some of the Cleveland rails have been already delivered.

The genuine Wootz steel comes from India in three forms, namely, in bullet-shaped pieces of a certain weight as they cool in the pots, and which comes from Calcutta; in cakes of 2½ pounds, from Bombay; and in cylindrical rods of about the same weight, from Golconda.

Special Notices.
THOS. TURTON & SONS,
Successors to
WM. GREAVES & SONS,
Steel, File and Railway Spring
Manufacturers,
SHEFFIELD, ENGLAND,
desire to give notice that they have removed their place of business from
104 John Street, New York,
to
40 Kilby Street, Boston,
where their American interests will be in future under the management of
MR. ALFRED A. ARTHUR.

Mining & Manufacturing Property For Sale or To Let.
A valuable property in New Jersey, at a railway station, consisting of rich iron mines, unexcelled water power, large factory and farm. Will sell all or part, or lease the factory with machinery, or the mine. For particulars apply to
THOS. H. STOUT,
70 Cedar St., New York.

AMERICAN SPECIAL MACHINERY.
The attention of
FOREIGN MANUFACTURERS
is invited to our facilities, for supplying the latest improvements and best workmanship.
RICHARDS & DOLE,
Springfield, Mass.

FOR SALE.
THE MUNCIE FOUNDRY AND MACHINE WORKS, of Muncie, Indiana, consisting of the Real Estate, Machinery, Tools, Patterns, Boiler and Blacksmith Shop. These works have one among the best, if not the best, locations in the West, and is located at the crossings and diverging points of six railroads in a fine agricultural country, and has built up a large and profitable business; and is a fine opening for young men with small cash capital to build up an extensive manufacturing business. Correspondence solicited, when a satisfactory reason for selling will be given, as well as a detailed statement of the property.
WYSON, HAINES & CO., Muncie, Indiana.

WANTED. The exclusive services of an engineer, or otherwise, of sterling integrity, energy and sobriety, who has large experience in the construction and management of coke furnaces. Undoubted references required.
Address: P. O. Box 32, Philadelphia, Pa.

Special Notices.

EXECUTORS' SALE OF AN Anthracite Blast Furnace.

The subscribers, executors of the last will and testament of Peter Uhler, late of the Borough of Easton, Pa., deceased, will sell at public sale, at the Circle, in said Borough, on

THURSDAY, October 16, 1879,
At 2 o'clock P. M.,
all that certain Anthracite Blast Furnace, located in the Borough of Easton, about two miles from Easton. The tract of land contains about 15 acres, and lies between the Lehigh Canal and Lehigh River, just below the Chain Dam, adjoining the Lehigh Valley Railroad. The furnace erected thereon is a sheet iron casing stack, 14½ feet high, with closed top; 1. P. Morris & Co.'s low pressure condensing engine, 8 boilers, 2 Kent's hot-blast ovens, casting house, engine house, steam hoist, &c. Also 11 good tenement houses, large store, two stables and a blacksmith shop. The furnace buildings are of brick and stone and put up in the best manner, with all the modern improvements. The works were built in 1877, and are in good order and nearly ready to blow in. Stock can be supplied by boats on Lehigh and Morris Canals or Lehigh Valley Railroad. Hematite ores can be delivered to the furnace for \$2.65 per ton and limestone for 30 cents per ton. The terms and conditions will be made known on day of sale by
E. L. HUNT,
Sale positive to close up the estate. Executors.

Rolling Mill for Sale.

The Real Estate, Machinery, Fixtures and Tools of the PORTLAND ROLLING MILLS will be sold at public auction, without reserve, to the highest bidder, at the mills.

TUESDAY, September 30, 1879,
At 3 o'clock P. M.
The property of the company consists of 60 acres of land on tidewater, in the town of Cape Elizabeth, Cumberland County, within ten minutes drive of the city of Portland. Besides the mill buildings the company owns 55 tenements in 20 buildings, one hall used for church purposes, two stores and a thoroughly well fitted office, with fire-proof vault and all modern improvements. All the buildings are in good repair. The mill contains one 10-inch train, and one 18-inch train, with all the machinery pertaining to the manufacture of rails and bars of iron. Its capacity is 14,000 tons of iron rails or 6000 tons of merchant iron per year. The property is provided with a thoroughly built wharf, at which vessels of 800 tons capacity can lie at low water, and is directly connected by rail with all the railroads centering at Portland. The mill is now in active operation, but possession will be given about the 15th of October, 1879.
PHILIP HENRY BROWN, President.
Portland, Maine.

PARK BENJAMIN'S SCIENTIFIC EXPERT OFFICE,
37 Park Row, New York.

Examines and reports on the novelty of inventions. Furnishes recipes and information on all industrial processes. Prepares drawings and engravings of machinery. Tests, designs, constructs and selects machinery. Address,
G. H. BENJAMIN,
Business Manager.

Special Notice.
Hardware Manufacturers' Exchange,
43 Chambers Street, New York.

The undersigned desires to inform all Manufacturers of Hardware throughout the United States that he has fitted up rooms, centrally located, well lighted, &c., running through from Chambers to Reade street, for the exhibition of manufactured goods in all lines of hardware. Any manufacturer can at a small annual cost exhibit his wares to actual buyers throughout the year, and all visitors can examine them from the exhibition. The advantages to both manufacturers and buyers are too apparent to need any explanation. For further particulars and application for space address
W. G. FULTON, Manager.

HARDWARE STORE FOR SALE,
In Dover, N. H., to Close an Estate.
The old established Hardware Store of G. F. Rollins & Co., with a well-selected stock of \$8000 to \$9000, and a good run of custom.
WM. H. ROLLINS,
Administrator.
Dover, N. H., Sept. 4, 1879.

For Sale,
One Iron Planer to plane five feet square and ten feet long. Cross and angle feed. Cross head moved up and down by power. Machine in excellent condition. Address
GEO. PLACE, Agt.,
121 Chambers St., New York.

SITUATION WANTED.—In wholesale or first-class retail business. A thoroughly competent hard-working man, long connected with referring to first-class well-known city houses, desires a position. Is rooted in business and general hardware; is a competent bookkeeper and good salesman. No objection to leaving the city. Address for reference and full particulars,
WILLIAMS, P. O. Box 1218, New York City.

A THOROUGH SALESMAN, with many years' experience on the road, and a good acquaintance with the Hardware Trade both East and West, is open for an engagement. Could invest, if desired, a few thousand dollars in a sure and good thing where the man is needed more than the money. Speaks German. Please address
"FRITZ,"
Office of The Iron Age, 83 Reade St., New York.

FOR SALE.—A complete establishment for the manufacture of Bolts and Nuts. A commodious brick building covered with slate. A large lot of ground with railroad track. A good engine and boiler. Counter-shafting, bolts, punches, bolt cutters, lathes, radial drills, taps, dies and everything in complete order for business. Will be sold at a bargain. Inquire of
S. CAPELLE, or ALLEN GAWTHROP, Wilmington, Del.

WANTED.—Situation as salesman for a Pig Iron dealer or manufacturer in one of the Eastern or Middle States. Satisfactory references given. Address,
PIG IRON,
Office of The Iron Age, 220 South Fourth St., Phila., Pa.

SITUATION WANTED.—As General or Assistant Manager, by a man of long experience in Rolling Mill and Nail Business. Best references for character and ability. Address MANAGER, Office of The Iron Age, 83 Reade Street, N. Y.

JUST PUBLISHED—SENT FREE.
Complete History of Wall Street Finance, containing valuable information for investors. Address BAXTER & Co., Publishers, 17 Wall Street, New York.

Special Notices.

Second-Hand & New Tools FOR SALE.

September List.

The Tools in the following list are all of Wood, Light & Co.'s make, have been used, but are all in good order and will be sold very low:

Five Engine Lathes, 15 in. swing 6 ft. bed.
Six Engine Lathes, 20 in. swing 8 ft. bed.
Five Engine Lathes, 20 in. swing 8 ft. bed.
One Engine Lathe, 21 in. swing 6 ft. bed.
One Engine Lathe, 21 in. swing 16 ft. bed.
One Engine Lathe, 24 in. swing 12 ft. bed.
One Engine Lathe, 28 in. swing 12 ft. bed.
Two Upright Drills, 27 in. swing, not geared.
Seven Bright Drills, 25 in. swing, not geared.
Two Planers, 22 in. x 30 in. x 10 ft.
One Planer, 35 in. x 30 in. x 10 ft.
One Planer, 37 in. x 37 in. x 10 ft.
One Planer, 42 in. x 36 in. x 15 ft.
One Planer, 72 in. x 48 in. x 24 ft.
One Shaping Machine, 15 in. stroke.
Four Bolt Cutters, various sizes.
One Horizontal Boring Lathe.

The following are all new tools to be sold very low, and are all Wood, Light & Co.'s make:

One Engine Lathe, 20 in. swing, 20 ft. bed.
One Shaping Machine, 14 in. stroke.
Seven No. 2 Bolt Cutters.
One No. 1 Bolt Cutter, with centers.
Five No. 2 Bolt Cutters, with center.

Also the following miscellaneous Tools:
One Portable Engine, 6 in. cylinder.
One Hand Milling Machine.
One "Pond" Index Milling Machine.
Three Chase Patent Pipe Cutting Machines.
Two Engine Lathes, 15 in. swing, 6 ft. bed. Two Engine Lathes, 20 in. swing, 8 ft. bed. One Engine Lathe, 15 in. swing, 6 ft. bed. Three Engine Lathes, 20 in. swing, 8 ft. bed. Six Turning Lathes, 24 in. swing, 4½ ft. bed. Three 4-spindle Drills.
One Gear Cutter. One new "Hardway" Bolt Heading Machine, to head up to 1½ in. bolts. One new "Hardway" Bolt Heading Machine to head up to 1½ in. bolts. A lot of Saw Tables and Wood Working Machinery.
Please specify which of the above tools you want and we will forward all particulars.

A Woodruff & Beach Beam Engine,
Low pressure, 45-inch cylinder, 54 inch stroke, with fly-wheel pulley 20 feet diameter, 36 inch face, and

Four Tubular Boilers,
60 inches in diameter, 20 feet long, and all connections practically as good as new.

For sale by
The Geo. Place Machinery Agency,
121 Chambers and 103 Reade St.,
NEW YORK.

FOR SALE.
A valuable property in the State of Wisconsin, free from all incumbrances, embracing an inexhaustible deposit of iron ore and about 500 acres of land, of which about 200 acres are covered with a heavy growth of large oaks and other hardwood timber. The ore is rich and free from even a trace of phosphorus. The facilities are unusually favorable for the manufacture of a superior quality of Charcoal Iron, and as cheap, if not cheaper, than can be manufactured elsewhere in the United States.

It is on the line of one of the leading railroads of the State, and is accessible to all Mississippi ports and the lakes. The veins of iron ore are to a certain extent developed, and had been successfully worked for some time. The greater part of the land would be well fitted for farming purposes, as the soil is very fertile, and the price asked for it will not exceed that asked for common farming land. Property in New York City or vicinity will be taken in exchange.

For information apply to or address the proprietor,
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Dubuque, Iowa.
Or **EDWARD MULLER,**
Care Brocklow & Co.,
P. O. Box 135, Newark, N. J.

FOR SALE OR LEASE,
A MANUFACTURING ESTABLISHMENT
IN SCRANTON, PA.
On corner of two main streets, only one-quarter mile on level road from two railway stations. Size of lot 50 by 150 feet; main building, 30 by 100 feet; engine, 35-horse power. Buildings and machinery first-class and nearly new.

Underlaid and surrounded with coal, the cost of fuel for steam is merely nominal. Best forge coal \$1.50 per ton. With complete lines of shafting, &c., the premises can be easily and cheaply adapted to any light manufacturing business. Former proprietor, after successfully manufacturing Axes and Ed. Tools in the vicinity for 32 years, designed and built this shop at an expense of \$10,000 for the continuance of the business, but failed during the late depression.

Having neither time nor ability to run these works, I will sell very low on easy terms.

Address,
AMBROSE MULLEY,
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Valve Refitting Machines.
All use of Globe Valves should have one. Send for circular and price list.

A few good agents wanted to sell on commission.
GRISCOM & CO.,
Pottsville, Pa.

FOR SALE.
Hardware Stock and Fixtures in one of the best towns in Nebraska. Will be sold low for satisfactory reasons. About \$2500 required. A splendid chance.
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Box 21, Lincoln, Neb.

FOR SALE.
Rail or Bar Train complete, with rolls for rolling rails on 21 to 65 lbs., and also for all sizes of bar iron, flats, rounds and squares, in perfect condition, having been in use for a short time only. For terms, &c., apply to
J. M. BROWNSON,
P. O. Box 748, Pittsburgh, Pa.

WANTED.
Situation as Salesman, Business Manager or correspondent, by a gentleman who has been connected with a large rolling mill for many years, and has an extensive acquaintance with the merchants and consumers of iron throughout the country. Address,
SALESMAN,
Office of The Iron Age, 77 4th ave., Pittsburgh, Pa.

Special Notices.

LARGE AND FRESH STOCK OF SECOND-HAND TOOLS.

PRATT & WHITNEY CO.'S TOOLS.

ALL GOOD AS NEW

One Hand Lathe, 15 in. x 5 ft.
One Upright Drill, 24 in. with bk. gear and self feed.
One No. 2 Spindle Drill.
Two No. 2, 3 " " " "
One No. 1, 5 " " " " 3 spindles geared for heavy work.
One No. 1 Power Milling Machine.
One Cutter Grinder.
One No. 2 Screw Machine.
Two No. 2 " " " " Plain Head.
One No. 2 " " " " wire feed.
One No. 2 " " " " " "
One Screw Slitting Machine.
One Double Cam Cutting Machine.

WOOD, LIGHT & CO.'S TOOLS.

Four 20 in. x 8½ ft. Engine Lathes, bk. geared, screw cutting, rod feed, 6½ rest, face plate, countershaft.
One 18 in. x 10 ft. ditto.
Three 18 in. x 8½ ft. ditto.
Four 16 in. x 8 ft. " "
Six 16 in. x 6 ft. " "
One 16 in. x 10 ft. 6½ rest, rod feed (not screw cutting).
One 21½ in. x 6 ft. Planer, down, cross and angle feed in the head.

MISCELLANEOUS TOOLS.

One Engine Lathe, 20 in. x 12 ft. Lamberville Iron Wks.
One " " " " 19 in. x 2½ ft.
One " " " " 16 in. x 2 ft. 6 in. Fildes, New.
One " " " " 15 in. x 2 ft. 6 in. good order.
Two " " " " 14 in. x 4½ ft. Putnam Mch. Co.
One " " " " 11 in. x 2½ in. Ance.
Hand Lathes, from 7 to 15 in. Swing.
One Planer, 42½ in. x 12 ft. Good order.
One " " " " 26 in. x 8½ ft. Putnam.
One " " " " 30 in. x 7 ft. 6 in. Stover.
One " " " " 16 in. x 2 ft. 6 in. good order. Pratt & Whitney.
One Crank Planer, 24 in. stroke. N.Y.S.E. Co. New.
One Shaping Machine, 8 in. stroke. Gould.
One " " " " 8 in. " Pratt & Whitney.
One Boring & Sharp Universal Miller.
One Wood & Light Milling Machine.
One Brainard Milling Machine, No. 8.
Seven Lincoln Pattern Milling Machines.
Two Ford Index Milling Machines.
One Smith & Garvin Hand Milling Machine.
One No. 2 Garvin Milling Machine.
Two 4-Spindle Drills. Ames Mfg. Co.
Four Sensitive Drills, drills to 3-16 in. hole.
One 2-Spindle Drill. Ames Mfg. Co.
One Suspension Drill, bk. geared, self feed.
One Rotary Shear for sheet metal.
One 120 lb. Steam Helve Hammer for Axes.
One Axle Centering Machine.
One No. 4 Stiles Punch Press.
One 7½ in. x 12 in. Milling Machine & Smith Engine.
One 10 H. P. Baxter Engine.
One 2 " " " "

E. P. BULLARD, 14 Dey st., New York.

Bessemer Steel Wire Rods,
in lengths averaging sixty pounds, guaranteed to draw at least to No. 9 without annealing and to draw to No. 24.
For sale by
E. S. WHEELER & CO.,
54 Cliff Street,
NEW YORK.

JOHN E. SWAN & BROTHERS,
GLASGOW, SCOTLAND,
Exporters of all brands of
Scotch & English Pig Iron.

See advice from London.

Old Iron Rails, Coals and Minerals.
TO MANUFACTURERS AND CAPITALISTS.

FLOWER PINS.
Address
J. H. PLUMMER,
1276 Pacific Street, Brooklyn, N. Y.

Blast Furnace for Sale or to Lease.
Situated on the Hudson. Size, 16x60, with first-class blowing machinery, ovens, tools, &c. The location for transportation of stock to the furnace and iron to the market is most excellent. There is a fine dock and good appliances for handling material. Iron can be made here very low, and at present prices at a good profit.
FALLOUT & TARR,
28 Platt St., New York.

A Party Starting a Small Rolling Mill
For the manufacture of small sizes of iron, wishes to find a practical man that fully understands the business and can furnish some capital to make him interested. Such a person will find it a safe and profitable investment.
Address,
ROLLING MILL,
Box 1749,
New York Post Office.

WE WILL TRADE LAND,
Improved or wild, for
HARDWARE, STOVES OR NAILS.
Land is near Topeka.

THOMPSON BROS.,
Topeka, Kansas.

A PRACTICAL IRON MANUFACTURER
owner of a Rolling Mill, 8 Puddling and Heating Furnaces, 2 Trains of Rolls, and all appliances; ready for immediate business; location not excelled in Eastern Pennsylvania; will sell, form a limited partnership, or take a partner on favorable terms. For particulars address C. E. W., Office of The Iron Age, 220 S. 4th St., Philadelphia.

FOR SALE OR RENT.—The Request furnace and 200 acres of ore and limestone; land can be sold or leased at a reasonable price.
Address
E. DALLETT HEMPHILL,
Lock Box 26, Allentown, Pa.

WANTED.—A SITUATION AS SUPERINTENDENT or manager, by a practical man who thoroughly understands the manufacture of iron in all its details, including merchant bar, hoops, sheets, plate and tank iron, &c. Satisfactory references. Address
"IRON,"
Office of The Iron Age, 83 Reade St., N. Y.

Special Notices.

One 9-inch Train Rolls,
One 16-inch Train Rolls,
Both with Housings.
One Steam Hammer,
One Pair Shears,
One Lat Steel Ingot Molds,
Three Large Woodward Steam Pumps,
Three Small Steam Pumps,
Two Hoisting Engines,
Three Steam Boilers,
One Lighthall Condenser,
One Surface Condenser,
Deck Pumps, Low Pressure Gauges,
Registering Gauges, &c.

FOR SALE LOW BY
DANIEL W. RICHARDS & CO.,
Dealers in

Scrap Iron & Metals,
88 to 96 Mangia St., New York.

Price Fifty Cents.
JUST ISSUED.

SECOND EDITION OF LEIGH'S Discount Book,

with a Guide Page added, by which any desired table can be referred to instantly, without turning a leaf or waiting a moment. This edition is handsomely bound in cloth, and will be mailed to any address upon receipt of the price, 50 cents.
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Contents of both Editions are the same. Pocket Edition is very convenient for many purposes, like PATENT MEDICINES, the "Largest Size is the Cheapest."

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Principal Industrial and Agricultural Cities and Centers of Europe.

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The Sherman Process Co.
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Issue Licenses to use the Process for the Manufacture of Iron and Steel

In the Bessemer Converter, Crucible, Siemens-Martin, Puddling, Blast and Cupola Furnaces. The use of this Process improves the quality of the product, saves fuel and labor, and does not require any change in furnace or manner of working. See page 17 of The Iron Age of Oct. 25th, 1877.

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Large Size, Full Leather.....\$12.00
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R. W. BOOTH & CO., Cincinnati, O.

Bissell & Welles,
Wholesale Hardware Auctioneers,
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Sales held weekly for the trade. Consignments solicited. We refer to the leading Manufacturers and Importers.

TO LARGE CONSUMERS
of fine light
Malleable and Gray Iron Castings.
We can offer special inducements in the way of very superior quality guaranteed, and at fair prices. Being ourselves large consumers and requiring the most perfect castings, other work is ensured the same attention.

MALORY, WHEELER & CO.,
New Haven, Conn.

CALIFORNIA AGENCY.
A San Francisco firm of File and Tool makers having an agent constantly traveling among the consumers in the State and West Coast, is desirous of representing some first-class Eastern Houses in the manufacturing hardware trade.
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THE IRON LINE.
For the transportation of
IRON, IRON ORE, COAL, &c.,
Between Lake Champlain, New York, Philadelphia, Pa., Wilmington, Del., and intermediate places.
For Freight apply to
F. W. STARK, 31 Coenties Slip, New York.
JOSEPH PHILBRICK, 2201 Beach St., Phila., Pa.

FOR SALE,
Job Lots and Bankrupt Stocks Hardware.
Great bargains offered to the trade.

A. W. WHEELER,
141 Lake St., Chicago, Ill.

Sanderson Bros Steel Co.
A limited number of shares for sale by
EDWARD FRITH & SON,
241 Pearl Street, New York.

30	Cr. Strap and T. Hinges, see page 30 A	50
31	A. Revised list of S and T hinges	50
32	Sharp's Strap and T Hinges	50
33	Heavy Strap, inches	50
	Per lb.....\$.38	8 10 12 14
	Ex. Heavy T, inches	6 8 10 12
	Per lb.....\$.38	8 10 12 14
34	Galvanized Sharp's S and T Hinges	50
35	No. 60, Fast Joint Plate Hinges	60
	4, 6, 8, 10 and 12 inch, per 100 lbs.	50
	14 inch and larger	50
36	No. 62, Loose Joint Plate Hinges	60
	4, 6, 8, 10 and 12 inch, per 100 lbs.	50
	14 in. and larger	50
37	No. 68, Hook and Eye Hinges	60
38	No. 66, Hook Hinges	60
	Add No. 105, same style and sizes as No. 66	60
	4, 6, 8, 10 and 12 inch, per 100 lbs.	50
	14 in. and larger	50
39	No. 68, Hook Hinges	60
	Add No. 105, same style and sizes as No. 68	60
	8, 10 and 12 inch, per 100 lbs.	50
	14 in. and larger	50
40	No. 72, Welded Hook Hinges	60
41	No. 70	60
42	No. 74	60
43	No. 76, Heavy Hook Hinges, to be sold	60
	8, 10 and 12 inch, per 100 lbs.	50
	14 in. and larger	50
44	Roller Plate and Raised Hinges	60
45	Blind Hinges	60
46	Sargent's Patent Blind Hinges, No. 12	75
47	Improved Gravity Blind Hinges	75
48	No. 1, for wood, per doz. sets	50
49	MacKrell's Blind Fast, list per doz. pairs	75
50	Drops and Pins	80
51	Turn Buckles	75
52	Reversible Gate Hinges, change list of	50
	No. 127 to \$7.50	60
53	Gate Hinges	60
54	Gate Latches	60
55	Barn Door Hangers and Rollers	60
56	Barn Door Hanger	70
57	Barn Door Hangers, N. E. pattern	70
58	No. 33 to 36, change list, as follows	65
59	No. 33	70
60	No. 34 to 46	65
61	Barn Door Roll	70
62	Bolts, Nos. 300, 320, 330, 340	60
63	No. 300, 320, 330, 340	60
64	No. 330	60
65	No. 370, 390	60
66	No. 380, 390	60
67	No. 335, 337, 338	55
68	No. 395, 397, 398	60
69	No. 395, change list and add new size	50
70	Inch	10 12
71	Per doz.	\$6.50 7.00
72	Bolts, Nos. 397, change list and add new sizes	50
73	Inch	10 12
74	Per doz.	\$6.50 7.00
75	Bolts, Nos. 398, change list and add new sizes	50
76	Inch	12 14
77	Per doz.	\$10.00 \$11.00
78	Floor Plates and Staples	50
79	Wrought Iron Flush Bolts	60
80	No. 471, 423	65
81	No. 492	65
82	No. 498	65
83	No. 400, 402, 403	60
84	No. 400, 403	60
85	Flush Bolts, Nos. 400, 403	60
86	Revised list, see new page 76	60
87	New Flush Bolts, No. 100	80
88	No. 98	75
89	No. 100	80
90	No. 100, change list as fol-	80
91	Each	\$6.00 7.00 9.00 10.00
92	Inch	3 4 6 8 10 12 14 16 18 20 22 24 26 28 30
93	Brass and Plated Flush Bolts	60
94	Brass Flush Bolts	65
95	Mortise Door Bolts	65
96	Brass and Plated Square Cased Bolts	60
97	Brass and Plated Chain Bolts	60
98	Bolts, No. 560, 561, change list of 6 in.	60
99	No. 560, 561, change list of 6 in.	60
100	No. 560, 561, change list of 6 in.	60
101	No. 560, 561, change list of 6 in.	60
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124	No. 560, 561, change list of 6 in.	60
125	No. 560, 561, change list	

<table> <tr><td>Nos.</td><td>832</td><td>833</td><td>838</td><td>839</td></tr> <tr><td></td><td>10.25</td><td>11.00</td><td>11.88</td><td>12.50</td></tr> <tr><td>Nos.</td><td>842</td><td>843</td><td>848</td><td>849</td></tr> <tr><td></td><td>11.25</td><td>12.00</td><td>12.88</td><td>13.50</td></tr> <tr><td>Nos.</td><td>852</td><td>853</td><td>858</td><td>859</td></tr> <tr><td></td><td>11.75</td><td>12.50</td><td>13.38</td><td>14.00</td></tr> <tr><td>Nos.</td><td>862</td><td>863</td><td>868</td><td>869</td></tr> <tr><td></td><td>12.25</td><td>13.00</td><td>13.88</td><td>14.50</td></tr> <tr><td>Nos.</td><td>872</td><td>873</td><td>878</td><td>879</td></tr> <tr><td></td><td>12.75</td><td>13.50</td><td>14.38</td><td>15.00</td></tr> <tr><td>Nos.</td><td>882</td><td>883</td><td>888</td><td>889</td></tr> <tr><td></td><td>13.25</td><td>14.00</td><td>14.88</td><td>15.50</td></tr> <tr><td>Nos.</td><td>892</td><td>893</td><td>898</td><td>899</td></tr> <tr><td></td><td>13.75</td><td>14.50</td><td>15.38</td><td>16.00</td></tr> <tr><td>Nos.</td><td>902</td><td>903</td><td>908</td><td>909</td></tr> <tr><td></td><td>14.25</td><td>15.00</td><td>15.88</td><td>16.50</td></tr> <tr><td>Nos.</td><td>912</td><td>913</td><td>918</td><td>919</td></tr> <tr><td></td><td>14.75</td><td>15.50</td><td>16.38</td><td>17.00</td></tr> <tr><td>Nos.</td><td>922</td><td>923</td><td>928</td><td>929</td></tr> <tr><td></td><td>15.25</td><td>16.00</td><td>16.88</td><td>17.50</td></tr> <tr><td>Nos.</td><td>932</td><td>933</td><td>938</td><td>939</td></tr> <tr><td></td><td>15.75</td><td>16.50</td><td>17.38</td><td>18.00</td></tr> <tr><td>Nos.</td><td>942</td><td>943</td><td>948</td><td>949</td></tr> <tr><td></td><td>16.25</td><td>17.00</td><td>17.88</td><td>18.50</td></tr> <tr><td>Nos.</td><td>952</td><td>953</td><td>958</td><td>959</td></tr> <tr><td></td><td>16.75</td><td>17.50</td><td>18.38</td><td>19.00</td></tr> <tr><td>Nos.</td><td>962</td><td>963</td><td>968</td><td>969</td></tr> <tr><td></td><td>17.25</td><td>18.00</td><td>18.88</td><td>19.50</td></tr> <tr><td>Nos.</td><td>972</td><td>973</td><td>978</td><td>979</td></tr> <tr><td></td><td>17.75</td><td>18.50</td><td>19.38</td><td>20.00</td></tr> <tr><td>Nos.</td><td>982</td><td>983</td><td>988</td><td>989</td></tr> <tr><td></td><td>18.25</td><td>19.00</td><td>19.88</td><td>20.50</td></tr> <tr><td>Nos.</td><td>992</td><td>993</td><td>998</td><td>999</td></tr> <tr><td></td><td>18.75</td><td>19.50</td><td>20.38</td><td>21.00</td></tr> <tr><td>Nos.</td><td>1002</td><td>1003</td><td>1008</td><td>1009</td></tr> <tr><td></td><td>19.25</td><td>20.00</td><td>20.88</td><td>21.50</td></tr> <tr><td>Nos.</td><td>1012</td><td>1013</td><td>1018</td><td>1019</td></tr> <tr><td></td><td>19.75</td><td>20.50</td><td>21.38</td><td>22.00</td></tr> <tr><td>Nos.</td><td>1022</td><td>1023</td><td>1028</td><td>1029</td></tr> 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<tr><td></td><td>52.75</td><td>53.50</td><td>54.38</td><td>55.00</td></tr> <tr><td>Nos.</td><td>1682</td><td>1683</td><td>1688</td><td>1689</td></tr> <tr><td></td><td>53.25</td><td>54.00</td><td>54.88</td><td>55.50</td></tr> <tr><td>Nos.</td><td>1692</td><td>1693</td><td>1698</td><td>1699</td></tr> <tr><td></td><td>53.75</td><td>54.50</td><td>55.38</td><td>56.00</td></tr> <tr><td>Nos.</td><td>1702</td><td>1703</td><td>1708</td><td>1709</td></tr> <tr><td></td><td>54.25</td><td>55.00</td><td>55.88</td><td>56.50</td></tr> <tr><td>Nos.</td><td>1712</td><td>1713</td><td>1718</td><td>1719</td></tr> <tr><td></td><td>54.75</td><td>55.50</td><td>56.38</td><td>57.00</td></tr> <tr><td>Nos.</td><td>1722</td><td>1723</td><td>1728</td><td>1729</td></tr> <tr><td></td><td>55.25</td><td>56.00</td><td>56.88</td><td>57.50</td></tr> <tr><td>Nos.</td><td>1732</td><td>1733</td><td>1738</td><td>1739</td></tr> <tr><td></td><td>55.75</td><td>56.50</td><td>57.38</td><td>58.00</td></tr> <tr><td>Nos.</td><td>1742</td><td>1743</td><td>1748</td><td>1749</td></tr> <tr><td></td><td>56.25</td><td>57.00</td><td>57.88</td><td>58.50</td></tr> <tr><td>Nos.</td><td>1752</td><td>1753</td><td>1758</td><td>1759</td></tr> <tr><td></td><td>56.75</td><td>57.50</td><td>58.38</td><td>59.00</td></tr> <tr><td>Nos.</td><td>1762</td><td>1763</td><td>1768</td><td>1769</td></tr> <tr><td></td><td>57.25</td><td>58.00</td><td>58.88</td><td>59.50</td></tr> <tr><td>Nos.</td><td>1772</td><td>1773</td><td>1778</td><td>1779</td></tr> <tr><td></td><td>57.75</td><td>58.50</td><td>59.38</td><td>60.00</td></tr> <tr><td>Nos.</td><td>1782</td><td>1783</td><td>1788</td><td>1789</td></tr> <tr><td></td><td>58.25</td><td>59.00</td><td>59.88</td><td>60.50</td></tr> <tr><td>Nos.</td><td>1792</td><td>1793</td><td>1798</td><td>1799</td></tr> <tr><td></td><td>58.75</td><td>59.50</td><td>60.38</td><td>61.00</td></tr> <tr><td>Nos.</td><td>1802</td><td>1803</td><td>1808</td><td>1809</td></tr> <tr><td></td><td>59.25</td><td>60.00</td><td>60.88</td><td>61.50</td></tr> <tr><td>Nos.</td><td>1812</td><td>1813</td><td>1818</td><td>1819</td></tr> <tr><td></td><td>59.75</td><td>60.50</td><td>61.38</td><td>62.00</td></tr> <tr><td>Nos.</td><td>1822</td><td>1823</td><td>1828</td><td>1829</td></tr> <tr><td></td><td>60.25</td><td>61.00</td><td>61.88</td><td>62.50</td></tr> <tr><td>Nos.</td><td>1832</td><td>1833</td><td>1838</td><td>1839</td></tr> <tr><td></td><td>60.75</td><td>61.50</td><td>62.38</td><td>63.00</td></tr> <tr><td>Nos.</td><td>1842</td><td>1843</td><td>1848</td><td>1849</td></tr> <tr><td></td><td>61.25</td><td>62.00</td><td>62.88</td><td>63.50</td></tr> <tr><td>Nos.</td><td>1852</td><td>1853</td><td>1858</td><td>1859</td></tr> <tr><td></td><td>61.75</td><td>62.50</td><td>63.38</td><td>64.00</td></tr> <tr><td>Nos.</td><td>1862</td><td>1863</td><td>1868</td><td>1869</td></tr> <tr><td></td><td>62.25</td><td>63.00</td><td>63.88</td><td>64.50</td></tr> <tr><td>Nos.</td><td>1872</td><td>1873</td><td>1878</td><td>1879</td></tr> <tr><td></td><td>62.75</td><td>63.50</td><td>64.38</td><td>65.00</td></tr> <tr><td>Nos.</td><td>1882</td><td>1883</td><td>1888</td><td>1889</td></tr> <tr><td></td><td>63.25</td><td>64.00</td><td>64.88</td><td>65.50</td></tr> <tr><td>Nos.</td><td>1892</td><td>1893</td><td>1898</td><td>1899</td></tr> <tr><td></td><td>63.75</td><td>64.50</td><td>65.38</td><td>66.00</td></tr> <tr><td>Nos.</td><td>1902</td><td>1903</td><td>1908</td><td>1909</td></tr> <tr><td></td><td>64.25</td><td>65.00</td><td>65.88</td><td>66.50</td></tr> <tr><td>Nos.</td><td>1912</td><td>1913</td><td>1918</td><td>1919</td></tr> <tr><td></td><td>64.75</td><td>65.50</td><td>66.38</td><td>67.00</td></tr> <tr><td>Nos.</td><td>1922</td><td>1923</td><td>1928</td><td>1929</td></tr> <tr><td></td><td>65.25</td><td>66.00</td><td>66.88</td><td>67.50</td></tr> <tr><td>Nos.</td><td>1932</td><td>1933</td><td>1938</td><td>1939</td></tr> <tr><td></td><td>65.75</td><td>66.50</td><td>67.38</td><td>68.00</td></tr> <tr><td>Nos.</td><td>1942</td><td>1943</td><td>1948</td><td>1949</td></tr> <tr><td></td><td>66.25</td><td>67.00</td><td>67.88</td><td>68.50</td></tr> <tr><td>Nos.</td><td>1952</td><td>1953</td><td>1958</td><td>1959</td></tr> <tr><td></td><td>66.75</td><td>67.50</td><td>68.38</td><td>69.00</td></tr> <tr><td>Nos.</td><td>1962</td><td>1963</td><td>1968</td><td>1969</td></tr> <tr><td></td><td>67.25</td><td>68.00</td><td>68.88</td><td>69.50</td></tr> <tr><td>Nos.</td><td>1972</td><td>1973</td><td>1978</td><td>1979</td></tr> <tr><td></td><td>67.75</td><td>68.50</td><td>69.38</td><td>70.00</td></tr> <tr><td>Nos.</td><td>1982</td><td>1983</td><td>1988</td><td>1989</td></tr> <tr><td></td><td>68.25</td><td>69.00</td><td>69.88</td><td>70.50</td></tr> <tr><td>Nos.</td><td>1992</td><td>1993</td><td>1998</td><td>1999</td></tr> <tr><td></td><td>68.75</td><td>69.50</td><td>70.38</td><td>71.00</td></tr> <tr><td>Nos.</td><td>2002</td><td>2003</td><td>2008</td><td>2009</td></tr> <tr><td></td><td>69.25</td><td>70.00</td><td>70.88</td><td>71.50</td></tr> <tr><td>Nos.</td><td>2012</td><td>2013</td><td>2018</td><td>2019</td></tr> <tr><td></td><td>69.75</td><td>70.50</td><td>71.38</td><td>72.00</td></tr> <tr><td>Nos.</td><td>2022</td><td>2023</td><td>2028</td><td>2029</td></tr> <tr><td></td><td>70.25</td><td>71.00</td><td>71.88</td><td>72.50</td></tr> <tr><td>Nos.</td><td>2032</td><td>2033</td><td>2038</td><td>2039</td></tr> <tr><td></td><td>70.75</td><td>71.50</td><td>72.38</td><td>73.00</td></tr> <tr><td>Nos.</td><td>2042</td><td>2043</td><td>2048</td><td>2049</td></tr> <tr><td></td><td>71.25</td><td>72.00</td><td>72.88</td><td>73.50</td></tr> <tr><td>Nos.</td><td>2052</td><td>2053</td><td>2058</td><td>2059</td></tr> <tr><td></td><td>71.75</td><td>72.50</td><td>73.38</td><td>74.00</td></tr> <tr><td>Nos.</td><td>2062</td><td>2063</td><td>2068</td><td>2069</td></tr> <tr><td></td><td>72.25</td><td>73.00</td><td>73.88</td><td>74.50</td></tr> <tr><td>Nos.</td><td>2072</td><td>2073</td><td>2078</td><td>2079</td></tr> <tr><td></td><td>72.75</td><td>73.50</td><td>74.38</td><td>75.00</td></tr> <tr><td>Nos.</td><td>2082</td><td>2083</td><td>2088</td><td>2089</td></tr> <tr><td></td><td>73.25</td><td>74.00</td><td>74.88</td><td>75.50</td></tr> <tr><td>Nos.</td><td>2092</td><td>2093</td><td>2098</td><td>2099</td></tr> <tr><td></td><td>73.75</td><td>74.50</td><td>75.38</td><td>76.00</td></tr> <tr><td>Nos.</td><td>2102</td><td>2103</td><td>2108</td><td>2109</td></tr> <tr><td></td><td>74.25</td><td>75.00</td><td>75.88</td><td>76.50</td></tr> <tr><</tr></table>	Nos.	832	833	838	839		10.25	11.00	11.88	12.50	Nos.	842	843	848	849		11.25	12.00	12.88	13.50	Nos.	852	853	858	859		11.75	12.50	13.38	14.00	Nos.	862	863	868	869		12.25	13.00	13.88	14.50	Nos.	872	873	878	879		12.75	13.50	14.38	15.00	Nos.	882	883	888	889		13.25	14.00	14.88	15.50	Nos.	892	893	898	899		13.75	14.50	15.38	16.00	Nos.	902	903	908	909		14.25	15.00	15.88	16.50	Nos.	912	913	918	919		14.75	15.50	16.38	17.00	Nos.	922	923	928	929		15.25	16.00	16.88	17.50	Nos.	932	933	938	939		15.75	16.50	17.38	18.00	Nos.	942	943	948	949		16.25	17.00	17.88	18.50	Nos.	952	953	958	959		16.75	17.50	18.38	19.00	Nos.	962	963	968	969		17.25	18.00	18.88	19.50	Nos.	972	973	978	979		17.75	18.50	19.38	20.00	Nos.	982	983	988	989		18.25	19.00	19.88	20.50	Nos.	992	993	998	999		18.75	19.50	20.38	21.00	Nos.	1002	1003	1008	1009		19.25	20.00	20.88	21.50	Nos.	1012	1013	1018	1019		19.75	20.50	21.38	22.00	Nos.	1022	1023	1028	1029		20.25	21.00	21.88	22.50	Nos.	1032	1033	1038	1039		20.75	21.50	22.38	23.00	Nos.	1042	1043	1048	1049		21.25	22.00	22.88	23.50	Nos.	1052	1053	1058	1059		21.75	22.50	23.38	24.00	Nos.	1062	1063	1068	1069		22.25	23.00	23.88	24.50	Nos.	1072	1073	1078	1079		22.75	23.50	24.38	25.00	Nos.	1082	1083	1088	1089		23.25	24.00	24.88	25.50	Nos.	1092	1093	1098	1099		23.75	24.50	25.38	26.00	Nos.	1102	1103	1108	1109		24.25	25.00	25.88	26.50	Nos.	1112	1113	1118	1119		24.75	25.50	26.38	27.00	Nos.	1122	1123	1128	1129		25.25	26.00	26.88	27.50	Nos.	1132	1133	1138	1139		25.75	26.50	27.38	28.00	Nos.	1142	1143	1148	1149		26.25	27.00	27.88	28.50	Nos.	1152	1153	1158	1159		26.75	27.50	28.38	29.00	Nos.	1162	1163	1168	1169		27.25	28.00	28.88	29.50	Nos.	1172	1173	1178	1179		27.75	28.50	29.38	30.00	Nos.	1182	1183	1188	1189		28.25	29.00	29.88	30.50	Nos.	1192	1193	1198	1199		28.75	29.50	30.38	31.00	Nos.	1202	1203	1208	1209		29.25	30.00	30.88	31.50	Nos.	1212	1213	1218	1219		29.75	30.50	31.38	32.00	Nos.	1222	1223	1228	1229		30.25	31.00	31.88	32.50	Nos.	1232	1233	1238	1239		30.75	31.50	32.38	33.00	Nos.	1242	1243	1248	1249		31.25	32.00	32.88	33.50	Nos.	1252	1253	1258	1259		31.75	32.50	33.38	34.00	Nos.	1262	1263	1268	1269		32.25	33.00	33.88	34.50	Nos.	1272	1273	1278	1279		32.75	33.50	34.38	35.00	Nos.	1282	1283	1288	1289		33.25	34.00	34.88	35.50	Nos.	1292	1293	1298	1299		33.75	34.50	35.38	36.00	Nos.	1302	1303	1308	1309		34.25	35.00	35.88	36.50	Nos.	1312	1313	1318	1319		34.75	35.50	36.38	37.00	Nos.	1322	1323	1328	1329		35.25	36.00	36.88	37.50	Nos.	1332	1333	1338	1339		35.75	36.50	37.38	38.00	Nos.	1342	1343	1348	1349		36.25	37.00	37.88	38.50	Nos.	1352	1353	1358	1359		36.75	37.50	38.38	39.00	Nos.	1362	1363	1368	1369		37.25	38.00	38.88	39.50	Nos.	1372	1373	1378	1379		37.75	38.50	39.38	40.00	Nos.	1382	1383	1388	1389		38.25	39.00	39.88	40.50	Nos.	1392	1393	1398	1399		38.75	39.50	40.38	41.00	Nos.	1402	1403	1408	1409		39.25	40.00	40.88	41.50	Nos.	1412	1413	1418	1419		39.75	40.50	41.38	42.00	Nos.	1422	1423	1428	1429		40.25	41.00	41.88	42.50	Nos.	1432	1433	1438	1439		40.75	41.50	42.38	43.00	Nos.	1442	1443	1448	1449		41.25	42.00	42.88	43.50	Nos.	1452	1453	1458	1459		41.75	42.50	43.38	44.00	Nos.	1462	1463	1468	1469		42.25	43.00	43.88	44.50	Nos.	1472	1473	1478	1479		42.75	43.50	44.38	45.00	Nos.	1482	1483	1488	1489		43.25	44.00	44.88	45.50	Nos.	1492	1493	1498	1499		43.75	44.50	45.38	46.00	Nos.	1502	1503	1508	1509		44.25	45.00	45.88	46.50	Nos.	1512	1513	1518	1519		44.75	45.50	46.38	47.00	Nos.	1522	1523	1528	1529		45.25	46.00	46.88	47.50	Nos.	1532	1533	1538	1539		45.75	46.50	47.38	48.00	Nos.	1542	1543	1548	1549		46.25	47.00	47.88	48.50	Nos.	1552	1553	1558	1559		46.75	47.50	48.38	49.00	Nos.	1562	1563	1568	1569		47.25	48.00	48.88	49.50	Nos.	1572	1573	1578	1579		47.75	48.50	49.38	50.00	Nos.	1582	1583	1588	1589		48.25	49.00	49.88	50.50	Nos.	1592	1593	1598	1599		48.75	49.50	50.38	51.00	Nos.	1602	1603	1608	1609		49.25	50.00	50.88	51.50	Nos.	1612	1613	1618	1619		49.75	50.50	51.38	52.00	Nos.	1622	1623	1628	1629		50.25	51.00	51.88	52.50	Nos.	1632	1633	1638	1639		50.75	51.50	52.38	53.00	Nos.	1642	1643	1648	1649		51.25	52.00	52.88	53.50	Nos.	1652	1653	1658	1659		51.75	52.50	53.38	54.00	Nos.	1662	1663	1668	1669		52.25	53.00	53.88	54.50	Nos.	1672	1673	1678	1679		52.75	53.50	54.38	55.00	Nos.	1682	1683	1688	1689		53.25	54.00	54.88	55.50	Nos.	1692	1693	1698	1699		53.75	54.50	55.38	56.00	Nos.	1702	1703	1708	1709		54.25	55.00	55.88	56.50	Nos.	1712	1713	1718	1719		54.75	55.50	56.38	57.00	Nos.	1722	1723	1728	1729		55.25	56.00	56.88	57.50	Nos.	1732	1733	1738	1739		55.75	56.50	57.38	58.00	Nos.	1742	1743	1748	1749		56.25	57.00	57.88	58.50	Nos.	1752	1753	1758	1759		56.75	57.50	58.38	59.00	Nos.	1762	1763	1768	1769		57.25	58.00	58.88	59.50	Nos.	1772	1773	1778	1779		57.75	58.50	59.38	60.00	Nos.	1782	1783	1788	1789		58.25	59.00	59.88	60.50	Nos.	1792	1793	1798	1799		58.75	59.50	60.38	61.00	Nos.	1802	1803	1808	1809		59.25	60.00	60.88	61.50	Nos.	1812	1813	1818	1819		59.75	60.50	61.38	62.00	Nos.	1822	1823	1828	1829		60.25	61.00	61.88	62.50	Nos.	1832	1833	1838	1839		60.75	61.50	62.38	63.00	Nos.	1842	1843	1848	1849		61.25	62.00	62.88	63.50	Nos.	1852	1853	1858	1859		61.75	62.50	63.38	64.00	Nos.	1862	1863	1868	1869		62.25	63.00	63.88	64.50	Nos.	1872	1873	1878	1879		62.75	63.50	64.38	65.00	Nos.	1882	1883	1888	1889		63.25	64.00	64.88	65.50	Nos.	1892	1893	1898	1899		63.75	64.50	65.38	66.00	Nos.	1902	1903	1908	1909		64.25	65.00	65.88	66.50	Nos.	1912	1913	1918	1919		64.75	65.50	66.38	67.00	Nos.	1922	1923	1928	1929		65.25	66.00	66.88	67.50	Nos.	1932	1933	1938	1939		65.75	66.50	67.38	68.00	Nos.	1942	1943	1948	1949		66.25	67.00	67.88	68.50	Nos.	1952	1953	1958	1959		66.75	67.50	68.38	69.00	Nos.	1962	1963	1968	1969		67.25	68.00	68.88	69.50	Nos.	1972	1973	1978	1979		67.75	68.50	69.38	70.00	Nos.	1982	1983	1988	1989		68.25	69.00	69.88	70.50	Nos.	1992	1993	1998	1999		68.75	69.50	70.38	71.00	Nos.	2002	2003	2008	2009		69.25	70.00	70.88	71.50	Nos.	2012	2013	2018	2019		69.75	70.50	71.38	72.00	Nos.	2022	2023	2028	2029		70.25	71.00	71.88	72.50	Nos.	2032	2033	2038	2039		70.75	71.50	72.38	73.00	Nos.	2042	2043	2048	2049		71.25	72.00	72.88	73.50	Nos.	2052	2053	2058	2059		71.75	72.50	73.38	74.00	Nos.	2062	2063	2068	2069		72.25	73.00	73.88	74.50	Nos.	2072	2073	2078	2079		72.75	73.50	74.38	75.00	Nos.	2082	2083	2088	2089		73.25	74.00	74.88	75.50	Nos.	2092	2093	2098	2099		73.75	74.50	75.38	76.00	Nos.	2102	2103	2108	2109		74.25	75.00	75.88	76.50
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Spelter and Zinc.—The market since our last report has been featureless, on the basis of 6¢ asked for Western. We quote: Common Domestic, 5½¢ @ 6¢; Silesian, 6½¢ @ 6¾¢; Refined Domestic, 8¢ @ 8½¢; and Bergeport from Lehigh ore, 9¢. Sheet Zinc is firm at 7½¢ @ 7¾¢. London, Sept. 16.—Quotations are fairly well maintained, but there is rather less inquiry. Producers are said to be almost void of stock, and, owing to the increased demand for galvanized iron, sellers are expecting this metal to increase in value later on.

Nickel.—Is unaltered at \$1.25 for prime American.

Antimony.—There has been considerable activity in this metal at last week's prices, since when the latter have been raised to 13¢ @ 13½¢.

EXPORTS

Danish West Indies.
Quinn, Value.
Palm, gals., 3155 \$207
Hdw., cks., 4145 359
Pump., 1 2 40

Bremen.
Mf. iron, pkgs., 4 423
Lea. belt, cs., 200
Ag. imp., pkgs., 6 348
Hdw., cks., 3 123
Lub. oil, blis., 3 889

Stockholm.
Palm, gals., 195,790 6,815

Elstinoe.
Palm, gals., 195,790 12,968

Hamburg.
Hdw., cks., 57 7,734
Ag. imp., pkgs., 85 825
Belting, bales, 3 340
Gas flx., cs., 4 70
Pumps, pkgs., 17 925
Mach'y, pkgs., 86 7,006
Tinware, cs., 5 80
W. closets, cs., 1 56
Tinware, cs., 1 56
Sew. mach., cs., 18 445
Iron rolls, cs., 2 246

Antwerp.
Palm, gals., 73,317 46,015
Ag. imp., pkgs., 3 1,978

Cristianita.
Palm, gals., 98,702 7,856

Danvig.
Palm, gals., 164,573 11,793

Gothenburg.
Palm, gals., 23,343 1,456

Konigsberg.
Palm, gals., 146,390 10,064

Stettin.
Palm, gals., 444,125 36,989

Amsterdam.
Palm, gals., 244,401 17,708

Rotterdam.
Mach'y, cs., 2 200
Copper, cks., 45 8,438
Pfdware, cs., 1 53
Belting, pkgs., 5 445
Lub. oil, gals., 198 2,650
Hdw., cks., 35 828
Pumps, pkgs., 27 1,300

London.
Slates, pcs., 106,713 3,000
Lub. oil, gals., 198 2,650
Mach'y, cs., 2 200
Hdw., cks., 35 828
Pumps, pkgs., 27 1,300

Argentine Republic.
Cars, 15,377 15,377
Ag. imp., pkgs., 33 9,853
Pump, lbs., 10,500 21,000
Refrigerators, 7 81
Slates, cs., 50 260
Mach'y, pkgs., 1 130
Pfdware, cs., 1 130
Mf. iron, pkgs., 1 130
Sew. mach., cs., 1 130
Nails, kgs., 50 240
Hdw., cks., 211 3,530

China.
Presses, cs., 2 70
Hdw., cks., 3 180
Hdw., case, 1 04

Africa.
Palm, gals., 130,967 10,303

United States of Colombia.
Cutlery, pkgs., 114 2,713
Arms, cs., 13 792
Nails, kgs., 13 70
Tinware, cs., 9 384
W. closets, pgs., 4 41
Glass, bxs., 13 23
Guns, case, 1 75
Wire, pkgs., 26 194
Shot, cs., 11 70
Mf. iron, pkgs., 10 327
Ag. imp., pkgs., 10 327
Crutches, cs., 19 377
Mach'y, pkgs., 104 9,579
Sew. mach., cs., 24,923
Glass, bxs., 19 565
Pumps, pkgs., 5 30
Palm, gals., 5434 750
Copper, cs., 1 176
Tin, mat, pgs., 1 458
Steamboat, 1 11,550
Hdw., cs., 133 3,573
Grindstones, pgs., 74
Car mats, pgs., 1,800
Caps, cs., 840
Trucks, 2 600
Iron, pkgs., 56 166
Pfdware, cs., 1 145
Powder, lbs., 162 33
Revolvers, cs., 2 478

Central America.
Hdw., cs., 4 63
Mf. iron, pkgs., 106 148
Tinware, cs., 6 130
Pumps, pkgs., 6 65
Sew. mach., cs., 2 25

Porto Rico.
Nails, kgs., 54 179
Coal, blis., 32 100
Gas flx., cs., 1 53
Hdw., cs., 16 350
Mf. iron, pkgs., 3 77
Tin, mat, pgs., 1 145
Glass, bxs., 8 36
Sew. mach., cs., 2 217

Waterford.
Palm, gals., 110,018 7,901

Cork.
Palm, gals., 551,675 39,189

Marselles.
Palm, gals., 115,355 6,638

Malta.
Palm, gals., 102,000 8,925

Oporto.
Ag. imp., pkgs., 2 8

Trieste.
Palm, gals., 266,960 19,000

Salonica.
Palm, gals., 131,000 11,500

Canary Islands.
Palm, gals., 24,000 1,970
Sew. mach., cs., 3 80
Hdw., cks., 3 300
Glass, bxs., 23 128

Haere.
Copper, cks., 1 14,625
Ag. imp., pkgs., 2 1,055
Silverware, cs., 1 300
Palm, gals., 310,179 15,120

IMPORTS

Of Hardware, Iron, Steel and Metals into the Port of New York, for the Week ending Sept. 16, 1879:

Hardware.
Alexandre F. & Sons,
Cartridges, bx., 1
American Fencing Co.,
Iron wire, bds., 288
Bloomfield J. C. & Co.,
Machinery, pkgs., 28
Mide, pkgs., 23
Boker, Hermann & Co.,
Hdw., cs., 58
Hdw., cks., 16
Brookline & Evans,
Galvanized wire net-
ting, rolls, 20
Carey Samuel,
Grinding stones,
cks., 13
Cary & Moon,
Cast steel wire,
bds., 55
Chapman J. L.,
Machinery, cs., 5
Degrauw, Aymer & Co.,
Chain, cks., 8
Chain, lengths, 5
Donald Jns.,
Machinery, pkgs., 1
Ehrlich & Co.,
Hdw., pkgs., 2
Erie and North Shore
Line,
Mide, pkgs., 14
Fletcher, Harrison & Co.,
Tools, bxs., 2
Folsom H. & D.,
Guns, cs., 3
Mide, pkgs., 5
Hermann H. & Co.,
Mide, pkgs., 93
Lalanc & Grosjean,
Mide, pkgs., 1
Livingstone W. & F.,
Grindstones, cks., 20
Maine Beet Sugar Co.,
Mach'y, pkgs., 167
Mason John W. Co.,
Wire rope coils, 9
McCoy & Co.,
Machines, cs., 1
McGraw, Thomas J.,
Tools, chest, 1
Merchants' Dispatch Co.
Gun wads, cs., 6
Meriden Britannia Co.,
Mide, pkgs., 14
Metro'ian Gas Light Co.,
Coal, tons, 603
Mitchell, Vance & Co.,
Mide, pkgs., 9
Moore's J. F. Sons,
Mide, pkgs., 5
Gun wads, cs., 7
Naylor & Co.,
Arms, cs., 19
Noyes, Smith & Co.,
Gun caps, cs., 2
Outerbridge, E. H.,
Chain,
Perkins & Co.,
Coal, tons, 447
Pim, Forward & Co.,
Hdw., cks., 6
Richard C. B. & Bros.,
Gun caps, bx., 1
Rogers H.,
Mide, pkgs., 13
Hdw., cs., 2
Schoverling, Daly &
Gales,
Hdw., cs., 14
Schuyler, Hartley &
Graham,
Mide, pkgs., 7
Squires H. C.,
Guns, cs., 3
Strueller, Lau & Co.,
Gun caps, cs., 20
Tillotson L. G. & Co.,
Tucker Joshua S. & Co.,
Machinery, bx., 1
Upson, Walton & Co.,
Wire rope coils, 2
Varney & Co.,
Gun caps, cs., 6
Wainwright A. H.,
Tools, chest, 1
Watson Dynamo Elec-
tric Machine Co.,
Machinery, cs., 4
Wetzel M.,
Mide, pkgs., 1
Wielbusch & Hülger
Hdw., Co.,
Cutlery hdw., and
caps, pkgs., 41
Witte J. G. & Co.,
Mide, pkgs., 20
Wolfe, H. & Co.,
Mide, pkgs., 9
Wolfe S. N. & Co.,
Rolled wire, pkgs.,
1234
Ironware, cks., 7
Mide, pkgs., 34
Order,
Anvils, 174
Cannel Coal, tons,
1460
Chains, cks., 17
Files, cks., 26
Files, cks., 33
Gas coal, tons, 897
Guns, cs., 4
Hdw., cs., 4
Hdw., pkgs., 7
Ironware, pkgs., 6

Iron.
Alexandre F. & Sons,
Bundles, 35
American Fencing Co.,
Rod iron, lots, 163
Brown Bros. & Co.,
Bars, 2711
Cooper, Hewitt & Co.,
Pig, tons, 5
Graft, Bennett & Co.,
Bars, 646
Henderson Bros.,
Pig, tons, 100
Irvin, Richard & Co.,
Pig, tons, 200
Isaacs Moses,
Old rails, pgs., 1993
Lee Jas. & Co.,
Pig, tons, 600
Lundberg Gustaf,
Pig, tons, 5
Marcel Wm. D.,
Ore, tons, 642
Naylor & Co.,
Spiegel, sen, a quan-
tity
Spiegel, sen, tons, 865
Phelps, Dodge & Co.,
Sheet iron, bds., 181
Williams J. S.,
Scrap, tons, 130
Williamson Jas. & Co.,
Pig, tons, 200
Wolf R. H. & Co.,
Rods, lots, 64
Order,
Bars, 5072
Bundles, 384
Fish plates, bds., 181
H. P. Iron, bds., 1350
Leaf spring steel, a
quantity
Old rails, pgs., 3106
Old rails, tons, 1187
Ore, tons, 16854
Pig, tons, 700
R. H. Iron, bars, 2964
Scrap, tons, 200
Spiegel, sen, kilogs.,
688,759
Spiegel, sen, tons, 360
Strips, 36

Metals.
Alexandre F. & Sons,
Lead pipes, bds., 80
Byrne Jos. & Co.,
Tin plates, bxs., 95
Cort N. L.,
Tin plates, bxs., 732
Jackson R. D.,
Bar tin, bds., 20
Laidlaw A. & Co.,
Copper, tons, 48
Lamarche H.,
Rolled zinc, cks., 70
Meyer J. A. & E.,
Oxide of zinc, cks.,
450
Morgan W. D.,
Tin plates, bxs., 356
Mortimer & Wisner,
Brass work, cs., 1
Morton, Bliss & Co.,
Tin sheets, pkgs., 1
Naylor & Co.,
Tin plates, bxs., 6645
Phelps, Dodge & Co.,
Tin plates, bxs., 117
Black tappers, bxs., 6
Pim, Forward & Co.,
Copper, bds., 60
Raynolds C. T. & Co.,
Quicksilver, bottles,
1
Stephani A. & Co.,
Lead capsules, cs.,
141
Thompson's Samuel
Nephew & Co.,
Soft lead, pgs., 4200
Wheeler E. S.,
Tin plates, bxs., 1360
Williams & Gulton,
Tin plates, bxs., 517
Order,
Antimony, cks., 268
Black tag, bxs., 106
Quicksilver, bottles, 49
Tin, ingots, 2600
Tin plates, bxs., 197
Tin, slabs, 1503

Steel.
Carey & Moon,
Steel, bds., 357
Frosser Thomas,
Bars, 24
Tool steel, bars, 20
Spring stl, bds., 30
Tire forgings, 30
Wheel tyres, cs., 4
Rings, bds., 1
Woodford W. O.,
Bars, 31
Bundles, 483
Cases, 18
Order,
Bars, 30
Bundles, 142

OLD METALS, PAPER STOCK, &c.

Although no actual change in prices has occurred in the Old Metal market since our last writing, we note a weakening in the price of Lead. The demand for Old Zinc is active, with a tendency to higher prices. The Rag and Paper Stock market continues rather dull. Book Stock is scarce.

The purchasing prices offered by dealers for Old Metals are as follows:

Copper, heavy, per lb. \$0.12 1/2 @ 1/4
Copper Bottoms, " " 10 @ 10 1/2
Yellow Metal, " " 10 @ 10 1/2
Brass, heavy, " " 10 @ 10 1/2
Brass light, " " 10 @ 10 1/2
Composition, heavy, " " 10 @ 10 1/2
Lead, solid, " " 10 @ 10 1/2
Lead, lead, " " 10 @ 10 1/2
Zinc, No. 1, " " 10 @ 10 1/2
Pewter, No. 1, " " 10 @ 10 1/2
Pewter, No. 2, " " 10 @ 10 1/2
Wrought Iron, " " 10 @ 10 1/2
Light do, " " 10 @ 10 1/2
Store Plate, " " 10 @ 10 1/2
Machinery do, " " 10 @ 10 1/2

The prices current for Rags, &c., are as follows:

Anvils, Linen, per lb. 3 @ 3 1/2
White Cotton, New, " " 4 @ 4 1/2
White, No. 1, " " 3 1/2 @ 4 1/2
White, No. 2, " " 3 @ 3 1/2
Seconds, " " 2 @ 2 1/2
Waxed, Woolen, " " 2 @ 2 1/2
Soft, do, " " 2 @ 2 1/2
Mixed Rags, " " 2 @ 2 1/2
Raggy, " " 2 @ 2 1/2
Jute butts, " " 2 @ 2 1/2
Kentucky bagging, " " 2 @ 2 1/2
Rough Stock, " " 2 @ 2 1/2
Scrap, " " 2 @ 2 1/2
Waste Paper and Scrap, " " 2 @ 2 1/2
Kentucky Bale Rope, " " 2 @ 2 1/2
Jarred Shaking, " " 2 @ 2 1/2
Grass Rope, " " 2 @ 2 1/2

PHILADELPHIA.

Office of The Iron Age, 220 South Fourth St. 1
PHILADELPHIA, September 16, 1879.

Pig Iron.—The market during the week has been greatly excited, and prices have made a further advance of from \$2 to \$4 per ton. Mill Irons are not to be had in quantity at any price, supplies having been completely exhausted. Buyers are here from all points; and from the best information we can gather, supplies appear to be as low in the West and South as they are here. Under such pressure from buyers the advance in price is quite natural, and the feeling now seems to be that even the present figures, high as they are, compared with quotations some time ago, are by no means dangerous, and are quite likely to be advanced several dollars per ton before the close of the year. The advance in finished Iron has been so rapid, and apparently of so healthy a character, that producers of pig metal are disposed to make quotations in proportion to values generally, and as Bar Iron, Plates and other products command ready sale at an advance of about 50 %, prices of raw material are still low by comparison. It is extremely difficult to quote prices; nominal figures are frequently given, but in the majority of cases, parties have no iron to sell. The latest transactions of which we have any knowledge were at \$24.50 @ \$26 for No. 1 Foundry, \$25 for No. 2 and Gray Forge, and \$22 @ \$23 for White and Mottled. At these figures the market may be considered steady, and anything like the demand of last week would be sure to send prices up still higher. There have been some heavy sales of Scotch Iron, but prices are now fully \$2 per ton higher and no great quantity offered at the advance. Shipments from England are expected to arrive pretty freely during the next three months, but if the reports of today by cable are correctly understood, there is little probability of continued imports unless at considerably higher prices than are now current. The report referred to, that the Scotch ironmasters have blown out 54 furnaces until prices advance to 50 %, is very assuring as regards foreign iron, and with such a consumption as we now have, there is apparently little reason to anticipate excessive supplies from any source.

Ores.—Are very scarce and prices steadily advancing. The Chester Iron Company have issued a circular stating that quotations for the present can only be made from day to day upon application from consumers. Their output last month was the largest ever made, and September and October are already largely engaged.

Blooms.—The market is bare of stock, and holders ask an advance of about \$3 per ton on following quotations, viz.:
Sunken Scrap Blooms (2464 lb), \$39 @ \$40; Northern Ore Blooms (2240 lb), \$34 @ \$38; best quality Charcoal Billets (2240 lb), for wire and steel purposes, \$59 @ \$61; Bars, do., \$63.50 @ \$66; Sheet Iron Blooms, cornered (2464 lb), \$54 @ \$56; Cold-blast Charcoal Plate Blooms, \$53 @ \$55; run-out Anthracite, \$46 @ \$48.50.

Muck Bar.—Sales during the week have been made at \$40, but there are none offered to-day, so that quotations are nominal at that price.

Structural Iron.—We have to note a further advance in prices, and orders have been taken to a fair extent at the figures herein quoted. The future is regarded with much uncertainty. There is no doubt a heavy demand, but the question of values is very unsettled. Manufacturers are willing to accept a moderate amount of business at present figures, but in the present condition of the market preference is given to small orders for early delivery. We quote: Angles, 3¢; Beams, Channels and Tees, 3.4¢ @ 3.5¢.

Plate and Tank Iron.—There is not anything special to report beyond the fact that prices are higher and orders increasingly difficult to place. The mills appear to be pushed to their utmost to make deliveries, and orders are already entered for quanti-

ties sufficient to give full employment to the mills for six or eight weeks to come. The following are the quotations made on latest transactions: Skelp, nominal at 3¢; Common Plate, 3.1¢ @ 3.2¢; Tank Iron, 3.25¢ @ 3.3¢; C. No. 1, 3.3¢; C. H. No. 1, 3.5¢; Flange Iron, 4.5¢ @ 4.7¢; Best Bloom, 6¢ @ 6.5¢.

Sheet Iron.—The demand is still increasing, but it is quite impossible to meet it, although manufacturers are running to their utmost capacity and turning out an enormous amount of goods. We understand that shipments of this Sheet have already been made from England, but there seems to be no apprehension of the market being overdone, and during the week prices have advanced about \$5 per ton, without in any degree checking the demand. It is almost impossible to give accurate quotations, as prices are subject to frequent changes, sometimes in course of a few hours. About \$5 per ton may be added to the following, viz.: Common Sheet, No. 20 to 23, 3.5¢ @ 3.6¢; No. 24 to 28, 3.7¢ @ 3.8¢; Best Refined Sheet, No. 25 to 28, 4¢ @ 4.1¢; No. 16 to 24, 3.7¢ @ 3.8¢; Best Bloom Sheets, No. 16 to 24, 5.8¢ @ 6¢; No. 25 to 28, 6.1¢ @ 6.2¢; Refined Plates or Blue Annealed, 5-16 to 16, 2.9¢ @ 3.1¢; Best Bloom, 5-16 to 16, 5.7¢ @ 5.9¢; A Patent Planché, 10½¢; B Patent Planché, 9½¢; Best Blooms, Galvanized, 20 % discount; second quality, 30 %.

Bar Iron.—Probably no department in the iron trade has been more excited than in Bars. There seems to be no limit to the demand, and the mills are not only pushed for immediate deliveries, but are urged to accept orders for future. Price seems to be no obstacle, and buyers are far more numerous at 2.8¢ than they were at 2¢ or 2.2¢. The nominal quotation to-day is 2.8¢, but we know of sales in quantity at 2.8¢, and we are credibly informed that 3¢ could be obtained if manufacturers were to offer at the price. Buyers have intimated their willingness to pay 3¢ if an order would be accepted. This is a singular commentary on the action of the Western ironmasters, who within the past six months declared that an advance from 1.9¢ to 2.0¢ in the East was premature and could not be maintained.

Steel Rails.—There is nothing to be said in regard to the Rail trade beyond the fact that the mills are full of work, and have plenty of orders offered to them, which they are compelled to decline. Sales are made at about \$50, at mill, but only for limited quantities, with deliveries to suit the seller.

Iron Rails.—We have not heard of any important transactions, chiefly because the mills have all the work they can manage during the next six or eight weeks. Price of material has also reached a point at which there is but little margin at the current quotations for new rails; and manufacturers are disposed to wait developments before making further engagements. The nominal quotation is about \$40 @ \$41 at mill, at which figures there are buyers for delivery during the next 60 days.

Old Rails.—The market appears to be more unsettled than ever, and all sorts of opinions are expressed. Some of the best informed parties in the trade say that \$30 will be reached within the next 60 days, but so far as we can see, buyers are less inclined to take hold now than they were two weeks ago. Spot lots are scarce, but shipments to arrive have been sold to-day at something less than \$27, and at that figure they are now freely offered. Prices are higher in England, but in anticipation of arrival of July and August shipments, consumers have withdrawn from the market, until values are more fully established. Streets have been sold at \$31 to \$33, and are still in demand at these figures. We quote the market unsettled at \$26.50 @ \$27 "to arrive," spot lots, 50¢ @ 51¢ higher.

Scrap Iron.—Prices are again higher, and stocks almost exhausted. Wrought may be quoted \$26 @ \$27; Cast, \$15 @ \$16.

Nails.—An advance has been made to 3.25, at which the market is firm. The usual discount is allowed for large lots.

PITTSBURGH.

Office of The Iron Age, 77 Fourth Avenue, 1
PITTSBURGH, Pa., September 16, 1879.

Pig Iron.—The market for this important article continues as strong and as excited as ever, and during the past week a further advance of \$2 @ \$3 per ton has been established. Notwithstanding the apprehensions in regard to overproduction and foreign importations, the price continues to go steadily upward, with a demand in excess of the supply, and some of the most sanguine predict now that prices will go to \$30—possibly \$35—before the upward movement is arrested. It has been fully established that there is an actual scarcity of Pig Iron, not only here and at those points tributary to this market, but throughout the West; and with a large and increasing consumption and very light stocks in the hands of sellers, it is not strange that the tendency is upward. While it is admitted that the production has been considerably increased, and also that additional idle furnaces will be started up shortly, there appears to be no apprehension here on the part of well-informed operators of any immediate oversupply; some idle furnaces cannot be started up for want of ore, and others cannot be got in readiness to start up for some time to come. Sales of Forge Irons have been made within the past few days at \$25 @ \$27.50, 4 mos., according to quality, and foundry grades at \$25 @ \$29, and some holders are now asking higher figures. There was a sale of 1000 tons on Saturday, of mill, at \$27.50, and we are confident of sales yesterday (Monday) at \$25 @ \$27.50, with rumored sales at \$28. Bessemer has sold in small lots at \$28 @ \$30. There is not much doing in Charcoal Irons, and they have not advanced as much as Bituminous Coal and Coke Irons, owing to the fact that there has not been so much demand for them. Stocks are light, however, and the tendency is upward.

Manufactured Iron.—While there has been no change in the card, the market is very firm, and as the mills are nearly all overhauled, it is almost impossible to place an order for present delivery, and there is a

very general disinclination on the part of manufacturers to contract for future delivery. Any further advance in the card necessitates an increase in the cost of puddling, hence manufacturers are not inclined to make any change in the card for the present, particularly in view of the fact that they have a good many low-priced contracts booked, made some time ago, before prices had advanced to where they are now. We continue to quote the market firm on a basis of 2.5¢, 60 days, for Merchant Bars, with small orders much more acceptable to manufacturers than large ones.

Nails.—The market continues firm at the recent advance, with an increasing inquiry, and as makers are unwilling to make any large contracts, it is evident that they consider a further advance not improbable. Notwithstanding there has been an advance of 1¢ per keg as compared with the lowest point, prices are still considered too low, and it is claimed that at current quotations the margin for profit is small; that with Bar Iron at 2½¢, Nails should bring \$3.25, and they may go to that figure before the upward turn is arrested. We continue to quote at \$3, 60 days, 2 ¢ off for cash.

Horse and Mule Shoes.—There is a fair business for the season, but no change in prices, which are firm at quotations, \$3.50 @ \$4.50 per keg for 100-keg lots; larger lots at special rates.

Wrought Iron Pipe.—Prices continue very firm, though irregular, and it is difficult to give close rates, as there is no uniformity. The tendency, however, is still to lower discounts, which may be quoted at from 35 to 45 %. Boiler Tubes unchanged at 40 @ 45 % off; Oil-well Casing, 18¢, net.

Steel.—There is no apparent abatement in the demand, and prices are firm, with a tendency to advance. Manufacturers, as a rule, are refusing to book orders for future delivery, except with the understanding that they are to obtain market price at time of delivery. Notwithstanding the brisk demand, there has been more or less "cutting" indulged in, and it is one of the main objects in forming the "Syndicate" to have a regular scale of prices, from which there shall be no deviation. Tool Steel is still quoted at 11¢ @ 12¢; Machinery do., 5¢ @ 7¢; Boiler Plates, 6¢ @ 7¢.

Rails.—There have been no recent sales of Steel Rails, the mills here refusing to make any additional contracts, owing to the marked advance in Bessemer Pig. Old Iron Rails continue very scarce; indeed, our market is almost, if not altogether, bare, and in the absence of sales, may be quoted at \$30 @ \$31 per ton, gross, and they could not be delivered here from the East for any less—none to be had in the West.

Scrap.—The market continues firm, with a continued upward tendency, but the advance is not as rapid as in Pig Iron and the products, and it rarely ever is. No. 1 Wrought Scrap may be quoted at \$26 @ \$27, net; Car Axles, \$35; Car Springs, \$30 @ \$31; Boiler Scrap, \$25 @ \$26; Blacksmith ditto, \$24 @ \$25; Wrought Turnings, \$17 @ \$18; Cast Borings, gross, \$12.50 @ \$13; Old Car Wheels, \$25 @ \$26. Stocks of all kinds of Scrap in this market are light.

Window Glass.—Discounts have been reduced to 70 & 10 % on single and 70, 10 & 10 % on double strength in car-load lots, and 70 & 10 % for the former and 70 & 5 % for the latter in a jobbing way. This is as high as American can be put and compete with French Glass. Some firms are having trouble with their employees, who have striking no ions in their hands, but it looks at present as if the trouble was about over. Some of the strikers resumed work last Saturday. There is a very fair demand, although there is nothing like the activity that characterizes the Iron business.

Coke.—The demand continues to keep pace with the supply, and prices are steady, but unchanged, ranging from \$1.20 to \$1.30 per ton of 2000 lbs., delivered free on cars at ovens.

Coal.—There is an increasing demand, which may be attributed largely to activity in manufacturing circles, not only here but throughout the country, and the indications are that the consumption this fall and winter will be larger than for some years past. We now quote Lump at 4¢ @ 4½¢ @ 5¢ per bushel, delivered free on cars, with a disinclination on the part of operators to make any very large sales, as the miners are ready to strike on very short notice. In the down-river markets, owing to the continued suspension of navigation, stocks are getting down and prices up. At Cincinnati, at least accounts, there were but two barges of Pittsburgh Coal afloat, and they were held at 10¢ per bushel.

Petroleum.—Notwithstanding the improvement in price in many other leading articles, Petroleum, both Crude and Refined, continues to rule very low, and what is worse, the prospect is not very promising for any immediate improvement. The great trouble is overproduction, and while this continues to be the case prices must of necessity continue to rule low and unremunerative. Latest reports from Oil City quote Crude at 65½¢ @ 66¼¢ per barrel for United certificates, and 70½¢ @ 71¼¢ per shipment; Refined is only bringing 6½¢ @ 6¾¢ per gallon on the seaboard.

CHATTANOOGA.

Office of The Iron Age, Market and 8th Sts., 1
CHATTANOOGA, Sept. 15, 1879.

General business has been better the past week than any previous week for a month back. Fall trade is opening rather earlier than usual, it generally not opening sooner than the middle or last of the month. Merchants in all lines have already stocked up and seem to be entirely satisfied with

the great canal at Muscle Shoals has been practically suspended for want of funds. Work on the smaller improvements above and below the great canal continues. The weather for the week has been dry and cool, especially cool nights, closing with a steady, soaking rain.

Pig Iron.—Stocks have been sold very low. If the demand continues another considerable advance must result. The demand seems to be almost entirely for immediate delivery. There are no stocks in the hands of dealers and brokers. Consumers have to depend on furnaces for supplies. We advance the outside figure on Gray Forge Coke \$1 per ton. Coke Irons—No. 1 Foundry, \$20 @ \$23; No. 2, \$17 @ \$20; Gray Forge, \$17 @ \$19; White and Mottled, \$15 @ \$16. Hot-Blast Charcoal—No. 1 Foundry, extra, \$22 @ \$24; ditto, \$20 @ \$22; No. 2 Foundry, \$17 @ \$20; Gray Forge, \$17 @ \$20; White and Mottled, \$16. Cold Blast Charcoal—Car Wheel Metal, \$22.50 @ \$27.50; do., Extra Standard, \$24 @ \$29; Forge, \$17 @ \$22.

Muck Bar, &c.—\$30 @ \$35.50; Old Rails, \$22 @ \$24; Wrought Scrap, \$18 @ \$20; Old Car Wheels, \$19 @ \$20. Old Rails and Wrought Scrap are very stiff at quotations, with advancing tendencies.

Ores.—Brown Hematite, 50 to 56%; per ton, \$1.75 @ \$2.25. Red Fossiliferous, 50 to 56%; per ton, \$1.20 @ \$1.60. The above prices for ores delivered in Chattanooga on cars or on the wharf from flat boats.

Nails.—The demand is very good and mill managers are very firm in their views. Sales are all made on daily rates. We quote at \$2.75 rates, no deduction on large lots and the market advancing.

Manufactured Iron.—All Merchant Iron is advancing, steadily keeping pace with the advance in Pig. We quote: Bars, 2.70¢; Railroad Spikes, 3¢; Light Rail, 2.50¢; Track Bolts, 3.75¢; Treble Bolts, 4.50¢.

Coke.—We quote 10¢ per bushel for washed foundry. Furnace at \$2.25 per ton on cars in Chattanooga.

Coal.—The fall business in this important article has fairly started. Best household Coals, strictly lump, run from 12½¢ @ 14¢, delivered. Run of mine to manufacturers, \$1.25 @ \$1.75 per ton.

Pig Lead.—5¢; Ingot Copper, 19¢.

Iron Rails.—The mills here and at Atlanta are not booking orders, being behind and running full to catch up. We quote 35 lb. Rail at \$45 @ \$47, and larger sizes at \$42 @ \$44 per ton.

Steel Rails.—We quote at \$47 at mill, and no supply for transient buyers.

BOSTON.

SEPTEMBER 13.—The iron market is active and excited, and there is hardly a variety of the metal upon which exact quotations can be given to-day. The advance since our last has been fully \$1 per ton, and spot lots of American Pig are hardly available at this point to-day under \$25 @ \$26 for No. 1 X, and \$24 @ \$25 for No. 2 X. At the shipping ports No. 1 X is in very urgent request, and can only be picked up in small lots, and there is an active demand for other grades. We quote shipping port prices at \$23 @ \$24 for No. 1 X; \$22 @ \$23 for No. 2 X; \$22 for Gray Forge, and \$19 for White and Mottled. Freight to Boston have advanced to \$1.40 @ \$1.45. Scotch Pig.—There have been importations this week of 610 tons of Scotch and English Pig Iron, which was either sold to arrive or was promptly taken as it came in. Prices are tending upward, as more attention is directed toward Scotch Pig, and it is difficult to give reliable quotations from day to day. Orders for good-sized lots to arrive at this port could hardly be placed at the present writing under \$23 for Eglinton and \$25 for Gartsherrie and Coltness. There are few if any spot lots available. Old Rails are firm at \$28, and with a rising tendency. Manufactured Iron has now developed fully as much activity as Pig, and is more feverishly excited than the latter. All of the merchant mills in this part of the country are full of orders to a sufficient extent to control their products for three months to come, and it is difficult to find place for an order of any magnitude, except on figures considerably higher than any which have yet been named. A nominal price for Refined Iron from mill is 2½¢. The demand from the stores is active at 2½¢ for fair-sized parcels and 2¼¢ in a retail way. Plate and Tank are equally active, and the orders which the mills have taken for future delivery have been limited only by the indisposition of the manufacturers to contract any further ahead. Some of the Pennsylvania mills represented at this point are under the control of orders for 60 to 90 days. The local mill refuses to take any further orders, excepting on a basis of 3½¢ @ 3¼¢ for Common Tank; 3.3¢ @ 3.4¢ for C. No. 1; 3½¢ @ 3¼¢ for C. H. No. 1 Shell; all these to be delivered in the latter part of October or early in November. From the stores there is an active demand for Plate Iron, and dealers report that they have advanced their figures to 3½¢ for Tank, 4¢ for C. No. 1, and 5¢ for Flange. Boiler Tubes are higher, the present discount being 45 per cent. on purchases of more than \$200, and 40 per cent. on smaller lots. Nails are firm and in moderate demand at last week's advance, and we continue to quote \$2.75 net for rod. to 60d. Sheet Iron continues to tend upward, and Boston store prices have advanced since our last to 3½¢ @ 4¼¢ for Nos. 12 to 18, 4¢ @ 4½¢ for Nos. 20 to 24; 4¼¢ @ 5¢ for Nos. 25 to 26, and 5¢ @ 6¢ for Refined. The demand for Galvanized and Russia Iron is active and improving, but prices are unchanged, quoting Galvanized at 7½¢ @ 8¢ for Nos. 14 @ 20, and 8¼¢ @ 11¼¢ for Nos. 21 to 25; Russia perfect at 13¢, and No. 1 stained 12½¢. Steel is in fair demand from the Boston stores, and we continue to quote: American Tool Steel at 11½¢ @ 13¢; English do. at 14¢ @ 15¢; American Spring Steel at 5¢ @ 6½¢; English do. at 7¢ @ 8¢; Tire Steel at 3½¢ @ 4¢; Bessemer machinery at 4¢ @ 5½¢, and Cast do. at 6¢ @ 7¢. Copper has advanced abroad, and there have been sales in New York at 16½¢ for large lots of ingot. Probably none would be available at this point under that figure. There is very little Copper here, and the prices at the stores are strong at 17¢ and

upward. There is no change in manufactures, and we continue to quote New Sheathing at 22¢, Braziers at 24¢ @ 26¢, and Bolts at 24¢. Yellow Metal Sheathing sells at 12½¢ @ 14¢ for American and 12¢ for English, the latter in bond. Antimony has advanced to 12½¢ @ 12½¢ for 25 to 50-cask lots; 13¢ for 1 to 5-cask lots; and 14¢ for smaller parcels. Lead is dull, and with buyers holding off, the tendency is toward a lower range of values. Large lots are freely offered at \$4 @ \$4.12½. Small lots of Pig from stores are quoted at 4½¢. Manufactures are unchanged, and we quote: Lead Pipe, 5½¢; Tin-Lined Pipe, 12¢; Bar Lead, 6¢; Sheet Lead, 6¢; Block Tin Pipe, 30. All of these are subject to the usual trade or 10 per cent. discount. Spelter is quiet and steady at 6¢ for car load lots, and 6½¢ @ 7¢ for smaller lots from store. Sheet Zinc is in good demand at 9¢ @ 9¢ ½ lb. Tin has continued fairly active, and with a further advance in the European and Eastern market closes strong here at 17¢ @ 17½¢ for Straits in lots of 10 tons and upward. Smaller lots are available at the following rates: We quote: Straits, 17¢ @ 18¢; Banca, 20¢ @ 21¢; English L. & F., 16½¢ @ 17½¢. Tin Plates are in fair demand and prices are firmer quoting Charcoal I. C. at \$6.50 @ \$7; Coke at \$5.20 @ \$6, and Charcoal Terme at \$6.25 @ \$8.—*Commercial Bulletin.*

CINCINNATI.

Messrs. E. L. HARPER & Co., under date of Sept. 13, write us as follows: It has become a custom to expect that every week's business shall show some decided improvement over the last, and the week closed has not proved an exception. The demand has been large at full quotations, and some sales made for future delivery are at a very considerable advance over present rates. Buyers manifest a desire to purchase for forward delivery at anything reasonable, but sellers act very conservatively in considering the opportunities offered. A further decided improvement in Car Wheel and Malleable Irons is to be noted, and the conditions presage a larger advance. At the opening of the year stocks were light, and have since become almost entirely exhausted. The production for some time past has been barely sufficient to meet the demands for consumption, and now, with the enormously increased demand, there is prospect of a short supply. The unprecedented amount of business the railroads are doing necessitates an increase in the rolling stock capacity, while it also wears out all their machinery more rapidly than heretofore. We are reliably informed that the eight Salisbury furnaces have sold all they can furnish during the winter months, and have decided to place prices at \$40 per ton at furnace, being an advance of about \$8 per ton. Forge Irons are in active demand, in sympathy with the encouraging state of the Manufactured Iron market. The mills report sales at 3.10¢ for Bar and 3.40¢ @ 3.60¢ for fire-bed Plate; also Common Sheet 4¢ @ 4½¢, according to gauge. Prices of Pig Iron advanced considerably, our quotations below showing the range of the market to-day.

HOT-BLAST FOUNDRY.

Hanging Rock C. C. No. 1	27.00 @ 27.50
C. C. No. 2	27.50 @ 28.00
Virginia Coke	28.00 @ 28.50
Alice Coke	28.00 @ 28.50
No. 2	28.00 @ 28.50
Fannie, American Scotch	27.50 @ 28.00
No. 2	27.50 @ 28.00
Hocking Valley S. C.	27.50 @ 28.00
No. 1	27.50 @ 28.00
Southern Coke No. 1	27.00 @ 27.50
Ohio Stone Coal, No. 1	26.00 @ 27.00
No. 2	25.00 @ 26.00
Open Silver Gray	26.00 @ 27.00

FORGE IRONS.

Hanging Rock, No. 1 C. C.	27.00 @ 27.50
Coke	26.00 @ 27.00
Longdale, No. 1 Coke	None offering.
S. P. No. 1 Coke	25.00 @ 26.00
Ala. and Tenn. C. C.	"
Red Short, No. 1 Coke	24.00 @ 25.00
Cold-Short, No. 1	24.00 @ 25.00
Old Car Wheels, cash	25.00 @ 26.00
Strong Neutral No. 1 Coke	25.00 @ 26.00
Southern Charcoal	None offering.
Coke	26.00 @ 27.00

CAR WHEEL AND MALLEABLE.

Hanging Rock C. B.	35.00 @ 37.00
Southern and Western Brands	32.00 @ 33.00
Lake Superior	31.00 @ 32.00

BALTIMORE.

W. N. WYETH, Iron and Steel Merchant, 46 and 48 South Charles street, Baltimore, reports us the following under date of Sept. 15: Since our last report all Manufactured Iron has taken another upward turn, and we now quote the list firm at 2.7-10¢ @ 2.8-10¢ for ordinary sizes Refined Bars. It seems to be no longer a question of price, but whether iron is obtainable and when. Ref. Bar Iron, 1 to 6 by ½ to 1 by 2-10 @ 2.8-10¢; 1 to 4 by ½ to 1 by 2-10 @ 2.7-10¢; ½ to 2, Round and Square, 2.7-10 @ 2.8-10¢; Hanging Rock, 1½ wide and upward, 3¢ @ 3½¢; Band Iron, from 1½ to 4 in. wide, 3¢ @ 3½¢; Horse-shoe Iron, 3¢ @ 3½¢; Norway Nail Rods, 3¢ @ 3½¢; Black Diamond Cast Steel, 7¢ @ 8¢; Machinery Steel, 7¢ @ 8¢; Cast Spring Steel, 7¢ @ 8¢; Homogeneous Steel Plate, 6¢ @ 7¢; Common Horse Nails, 2¢ @ 2½¢; R. R. Spikes, 5½¢ @ 6¢; Perkins' Horse shoes, ½ keg of 100 lbs., \$3.50; Mule shoes, 4.00 @ 4.25; Putnam Horse Nails, 10 @ 12 @ 13 @ 14 @ 15 @ 16 @ 17 @ 18 @ 19 @ 20 @ 21 @ 22 @ 23 @ 24 @ 25 @ 26 @ 27 @ 28 @ 29 @ 30 @ 31 @ 32 @ 33 @ 34 @ 35 @ 36 @ 37 @ 38 @ 39 @ 40 @ 41 @ 42 @ 43 @ 44 @ 45 @ 46 @ 47 @ 48 @ 49 @ 50 @ 51 @ 52 @ 53 @ 54 @ 55 @ 56 @ 57 @ 58 @ 59 @ 60 @ 61 @ 62 @ 63 @ 64 @ 65 @ 66 @ 67 @ 68 @ 69 @ 70 @ 71 @ 72 @ 73 @ 74 @ 75 @ 76 @ 77 @ 78 @ 79 @ 80 @ 81 @ 82 @ 83 @ 84 @ 85 @ 86 @ 87 @ 88 @ 89 @ 90 @ 91 @ 92 @ 93 @ 94 @ 95 @ 96 @ 97 @ 98 @ 99 @ 100 @ 101 @ 102 @ 103 @ 104 @ 105 @ 106 @ 107 @ 108 @ 109 @ 110 @ 111 @ 112 @ 113 @ 114 @ 115 @ 116 @ 117 @ 118 @ 119 @ 120 @ 121 @ 122 @ 123 @ 124 @ 125 @ 126 @ 127 @ 128 @ 129 @ 130 @ 131 @ 132 @ 133 @ 134 @ 135 @ 136 @ 137 @ 138 @ 139 @ 140 @ 141 @ 142 @ 143 @ 144 @ 145 @ 146 @ 147 @ 148 @ 149 @ 150 @ 151 @ 152 @ 153 @ 154 @ 155 @ 156 @ 157 @ 158 @ 159 @ 160 @ 161 @ 162 @ 163 @ 164 @ 165 @ 166 @ 167 @ 168 @ 169 @ 170 @ 171 @ 172 @ 173 @ 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R. C. HOFFMAN & Co., Iron and Commission Merchants, report the Pig Iron market as follows under date of Sept. 15: The demand for Iron Hoops is in excess of the supply, particularly Charcoal Wheel Irons, and prices have further advanced. We quote prices to-day as follows:

Baltimore Charcoal Wheel Iron	28.00 @ 30.00
Virginia	30.00 @ 32.00
Anthracite No. 1	24.00 @ 25.00
No. 2	23.00 @ 24.00
No. 3	22.00 @ 23.00
Mottled and White	20.00 @ 21.00
Charcoal, C. B. Blooms	33.00 @ 35.00
Billets	35.00 @ 37.00
Refined Blooms	45.00 @ 50.00

LOUISVILLE.

Messrs. GEO. H. HULL & Co., under date of Sept. 15, write us as follows: The market is very firm, and the advance fully sustained. Most of the furnaces have with-

drawn from the market until they catch up with their sales, and the sales in consequence are not so large. The usual time, 4 mos., is allowed on quotations below:

No. 1 Hanging Rock, Charcoal	29.00 @ 30.00
No. 2	28.00 @ 29.00
No. 1 Southern, Charcoal	28.00 @ 29.00
No. 2	27.00 @ 28.00
No. 1 Hanging Rock, Stonecoal and Coke	28.00 @ 29.00
No. 2 Hanging Rock, Stonecoal and Coke	27.00 @ 28.00
No. 1 Southern, Stonecoal and Coke	26.00 @ 27.00
No. 2	25.00 @ 26.00
"American Scotch"	25.00 @ 26.00
Silver Gray	24.00 @ 25.00

No. 1 Charcoal, Cold-short and Neut'l	26.00 @ 27.00
No. 1 Stonecoal and Coke, Cold-short and Neut'l	24.00 @ 25.00
No. 2 Stonecoal and Coke, Cold-short and Neut'l	23.00 @ 24.00
No. 1 Missouri and Indiana Red-short	26.00 @ 27.00
White and Mottled, Cold-short and Neut'l	18.00 @ 19.00

Hanging Rock, Cold-blast	32.00 @ 35.00
Alabama and Georgia, Cold-blast	30.00 @ 35.00
Kentucky, Cold-blast	30.00 @ 35.00

W. B. BELKNAP & Co., Iron and Hardware Merchants, Nos. 113 and 115 West Main street, under date of September 15, write as follows: We still have more advances to report. The remarkable activity seems rather to have increased in intensity. Since our last report Hoop Iron has made two advances of 2-10¢ and 3-10¢ respectively, so that the price is established at \$10 per ton over that of a week ago. About the same can be said of light sheets, which most mills decline to quote at all, being overrun with orders. The price of bars is nominally 2½¢, but an order sent to Cincinnati a few days since for fancy sizes, was declined even at that. One Cincinnati mill has put out a card at 3¢, and, from all indications, it will be but a short time before the rest will follow. Wheeling having advanced Nails to \$2.75 has fixed the price for points West and South, and all holders consider them as desirable property. One great annoyance in the disturbed state of the market is the change of lists, which some manufacturers indulge in rather than lower their discounts, a most inconsiderate move, as it is extremely difficult to readjust one's ideas of relative price. Besides, expensive catalogues are rendered obsolete at once, and there are no means of ready correction. A much simpler way is to change the discounts, and we wish that the manufacturers of goods that are sold on extended lists would establish it that way.

ST. LOUIS.

St. Louis, Mo., Sept. 15, 1879. While the demand for iron is not very large it is very pressing, and the supply continues short beyond anything heretofore known in this market. Car Wheel Irons do not sympathize as fully with the advance made in other irons as they should. The advance, however, as will be noted from quotations below, is sharp, well defined, and well maintained. The prices quoted on Foundry Irons are stiff and strong, holders being firm and full of bright anticipations for the future. Many of the irons quoted cannot be gotten at any price, and to that extent quotations are nominal. We quote for to-day, 10-ton lots for cash as follows, viz.:

Missouri	32.00 @ 34.00
Southern	34.00 @ 36.00
Ohio	35.00 @ 37.00

Missouri	32.00 @ 34.00
Southern	34.00 @ 36.00
Ohio	35.00 @ 37.00
Hanging Rock	31.00 @ 33.00

Missouri	32.00 @ 34.00
Southern	34.00 @ 36.00
Ohio	35.00 @ 3

ized sheets are similarly stiffer. A Liverpool house is said to have an American order for 7000 tons of cotton ties, to give out in lots of 1000 tons each, and Earl Dudley's horse-shoe iron is stated to be selling freely for your consumption. At Wolverhampton orders for locks are reported from your side, and the same thing has happened at Willenhall. From Stockton-on-Tees 2000 tons of Messrs. Bell's Clarence pig is said to have been ordered by New York buyers. In South Wales and Monmouthshire there is an anticipation that Cyfarthfa may shortly again be started. An able manager from Downais is alleged to have been secured, and rumor points to a matrimonial alliance between a Quest and a Crawshaw as a probable means of resuscitating the famous old place.

FOREIGN.

FRANCE.

(Moniteur des Interests Matériels.)
Paris, Aug. 31, 1879.—Metals.—The week has been duller than its predecessor, a great many merchants having returned to the country. Copper.—This metal has been rather quiet, with a decline of between 1 and 1.75 francs the 100 kilos. We quote, at Paris: Chile Bars, 143 @ 144; Ingots and Slabs, 131.50; Best Selected, 132.50; and Corrocoro, 130. Havre is nominally 143.75 @ 147.50 with Chili Bars. Marseilles has dropped 3 francs. They quote: Small Rods, 135; Sheet Copper and Yellow Metal Sheathing, 170; Copper Bolts, 185; and ditto Sheathing, 175. Tin.—Great firmness is the characteristic of the market, with an advance of between 2 and 2.50 francs. We quote here all sorts except English, 183; and the latter, 185 francs. Marseilles has risen 5 francs. They quote: Banca, 185; French and English, 180; and Straits, 175. Lead is quite stiff, and maintains the recent advance effected at this center. We quote the range here 35.50 @ 36.50, and Manufactured, 40. Havre is steady at 35.50 @ 36 for Soft Spanish. Marseilles the smelting and refining works have hardly got any stock left, and an improvement has taken place of between 2 and 2.50 francs. They quote the various sorts from 33 to 35.50 francs, and Manufactured, 38.50 @ 39.50. Spelter has become quite firm, but no further advance has taken place in the French markets. We quote good qualities Silesian, at Paris, 45.50 @ 46.50; and Sheet Zinc, 45 francs. Havre is steady at 45.50 @ 46.50. Marseilles continues to show an extraordinary degree of firmness. They quote: Sheet Zinc, 46 @ 47 francs; and old Remelted, 47. Nickel.—M. M. Neury & Co., St. Denis, quote pure Nickel 27 @ 28.50; and Ingots, 7 francs the kilo; and Anodes, 10 francs; ditto, 50 @ 54.50 francs. Iron.—Business in the Paris iron market has been rather quiet. We hear from the Haute-Marne, also, that there is less doing; the foundries, however, still receive a great many orders for articles consumed during the winter season. At a recent adjudication held to furnish the telegraph, the d'Arville forces obtained the job of 150 tons, the total amount of orders of 750 and the Chatillon-Commentry one of 300 tons. In the Loire and Rhone there have been received some orders of magnitude for Sheet Iron, as well as some for railroad material abroad. Prices obtained have, however, been decidedly low. In the Marne and Moselle "affairs" is still selling at 55 francs on account of the heavy stock. At Longwy, a somewhat larger tone is nevertheless noticeable. Iron for export being firm, second fusion pig iron remains quite stiff in response to the quotations in England. At the North T. Iron sells at 170 @ 175, and Mercur iron at 160. The being less active in building just at present at Paris, architectural iron is in less demand, but prices are by no means affected thereby. We are informed that the Joinville-le-Pont forces will soon resume operations under the management of the Seine and Rhone Company, M. Plite, director. M. M. Baudet, Donnan & Co. have obtained some important jobs for the port of St. Nazaire this week. There has been a falling off in the amount of pig and special iron received at Paris during the first five months of the year of about 4,000,000 francs of the latter and 1,350,000 francs of the former; the total amount of both has been this year upward of 24,000,000 francs. Coal.—There is a demand for industrial coal, while domestic is neglected. The city of Paris will buy some coal to be delivered in the course of the next years for offices and other municipal wants, the quantity necessary being 11,500 tons per annum.

BELGIUM.

(Revue Universelle.)

BRUSSELS, AUG. 24, 1879.—Iron.—Every maker we have seen this week—and we have seen a number of them—reports favorably so far as the amount of work on hand is concerned, but we are unanimous in complaining of low prices. Most of them are making great efforts in the meantime to push the export of both iron and steel, in doing which they of course encounter a formidable foreign competition. If, therefore, the situation as it is is not a brilliant one in point of remunerative prices, it is at least one not lacking in activity; a different spirit has been engendered, and it manifests itself on all hands. A spirit of optimism is different from the disconsolate one we have been picturing in these columns for many a year past. On the 12th proximo quite an adjudication of railway cars for the State lines will come off, and as Ghent there will be held one for architectural purposes on the 13th. Just at present some new railroads will be built in this vicinity, and will be productive of some additional activity. A national exhibition, to be held in this city next year, the government will exhibit railroad material, especially rolling stock, duplicated from what is actually in use on its lines. This will, of course, be a little affair, as all the different works will have orders to that effect, and will of course be well paid for these extra jobs. It shows that the government is in every imaginable manner favoring local industries, whenever it can do so consistently with its own interests and those of the country at large. They inform us from Charleroi that the sheet iron demand in that locality is slack, and that the Phoenix Works at Chateletx will soon cease operations in consequence. The rolling mills turning out Merchant iron, on the other hand, are quite busy, having received a great many commands both for consumption and export. Coal.—There is a steady demand for manufacturing purposes, and there begins to be some looking round for contracting for domestic coal.

GERMANY.

(Borsenalle.)

HAMBURG, AUG. 30, 1879.—Metals.—The week has been less active, there being less attendance on change. Copper.—Rather an improve feeling has been developing as regards this metal, the demand increasing unobtainably. At Berlin good qualities English and Australian have been fluctuating between 62 and 64 marks. We quote the various sorts here as follows: Dronheim, 64; Minnesota, 60; Hecla, 66, and English Tough Cake, 65 @ 64. Tin.—The market is rising. Berlin now quotes Banca, 75 @ 72.50, and English, 68.50 @ 69. There is little transpiring here, but holders are firm. Lead.—There is a good deal of difference between the various markets. Berlin is firm, while here we are decidedly weak. There is no change in quotations. Spelter.—The firmness and rising tendency, lately described, have in no manner abated. Berlin quotes Silesian 18.50 @ 19.25, the 50 kilos; English is steady at 17.50 for P. H. to arrive, and W. H. 18.25. Here more business would be transacting for the great scarcity, and prices are altogether nominal. The leaving of makers and holders in Germany maintain an attitude of firmness, and do their best to avail themselves of the favorable position of the metal in order to push prices if possible a little further. The chances are that this endeavor will be attended with success.

HOLLAND.

(Kreglinger & Co.)

ROTTERDAM, Sept. 2, 1879.—Tin.—In sympathy with higher quotations in London, a firm feeling has existed here, and a fair business has been doing for tin on the spot at advanced rates. Banca on the spot is worth 41.25, and to arrive and to be delivered from the coming sale, 42.75; Biliton on the spot, 41.75, and for forward delivery 42. At the close Banca is salable at 42, and held at 42.50, and Biliton at 41.75 guilders the 50 kilos. On review-

ing the past month, we find that Banca was very quiet at the beginning of it, prices giving way about 1/2 guilder. With an excellent trade, demand and some speculative buying, a decidedly better feeling later on manifested itself, and we can report the recovery, of which note has been taken above. This advance has been chiefly brought about by increased buying on the part of the trade, which we consider a highly satisfactory feature. The metal markets generally display more activity than has been the case for a long time, and a further improvement during autumn is confidently looked for. Some 12,000 piculs Biliton offered in public sale at Batavia on the 18th inst. fetched the average price of 43.26, costing to sell here about 38 guilders per steamer. The next sale, comprising the same quantity, will be held on October 17. There have been imported during the first eight months of Banca Tin, 99,965 slabs, against 99,609 last year, and 115,249 in 1877. The deliveries have been 93,625, against 78,288 and 93,570, and there is a stock left of 78,758, against 61,148 and 59,199, and the stock is 72,725, against 54,225 and 49,171. There are afloat of it 18,000 piculs, against 17,000 and 14,000. The price of Banca last year on September 1 was 38, against 40.50 in 1877, and 36, against 38.50. The government returns for the month of June are as follows:

EXPORT OF TIN FROM HOLLAND.

	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.	Jan.	Feb.	Mar.	Apr.	May.	Total.
To	1879.	1878.	1877.	1879.	1878.	1877.	1879.	1878.	1877.	1879.	1878.	1877.	
Germany	198	193	312	1,339	1,716	1,595	1,243	1,144	1,144	1,144	1,144	1,144	11,444
Belgium	117	143	633	769	994	994	994	994	994	994	994	994	9,994
France	43	87	41	190	238	351	351	351	351	351	351	351	3,511
Hamburg	31	47	34	159	345	191	191	191	191	191	191	191	1,911
United States	129	36	20	73	233	260	260	260	260	260	260	260	2,600
Other countries	60	20	127	73	233	260	260	260	260	260	260	260	2,600
Total	458	480	660	3,076	3,377	3,595	3,595	3,595	3,595	3,595	3,595	3,595	35,995

EAST INDIES.

(Guthrie, Wood & Co.)

SINGAPORE, July 29, 1879.—Tin.—The market has improved owing to better news from England, and to small supplies. There are buyers for the United States at \$40 per picul. The shipments to New York during the past fortnight from here and Penang have been 185 tons, all by steamers via England. Freight.—There is a moderate supply of tonnage, sufficient for our requirements, and rates are unchanged. For New York, the Susan A. Blaisdell has cleared without tin on board. The Olurte will clear to-morrow, and will be followed in a few days by the Coriaca, leaving the berth occupied by the W. H. Thorndike only. Rates are still quoted 20 for dead weight. For Boston, the Ellsworth is nearly a full ship, and the Churruca has been chartered on secret terms to follow her. Exchange touched 3/8 for 6 months' sight credit drafts.

MINING AND MINERAL ITEMS.

COAL.

At Raymond City, W. Va., the mines are all shut down. It is not known how long it will last. The company put in a screen 1 1/2 inches wide, whereby the miner loses four or five bushels from previous measurements. The Trenton (Ill.) coal shaft is working about three-fourths time. At Houtzdale, Pa., work was very dull last month, owing to a lack of railroad cars, and appearances seem to indicate that this month will be no better, as the mines are idle from the same cause. Five hundred men and boys have been thrown out of work by the suspension of mining at the Pittston and Elmira Coal Co.'s Seneca Colliery, in Pennsylvania.

IRON.

From the Marquette Mining Journal we clip the following: The following exhibits in gross tons the total lake shipments of ore this season up to and including September 3, together with the amount shipped during the corresponding period last year:

Where From.	1879.	1878.
Escanaba	411,976	379,486
Marquette	369,364	393,418
L'Anse	27,544	22,779
Total	808,884	795,683

Showing an increase of 91,711 tons. The manganese mine is developing as well as its owners could reasonably expect, and yet it comparatively little is known of the real value of the property. Some 5000 tons have already been mined, much of which carries an average of not less than 20 per cent. of manganese, which gives it a greater value in the market than the ordinary hematites. The iron ore mines on John Landis' land, at Barto station, leased by Grove & Bro., Danville, and worked by William Rowe, of Reading, will resume operations very shortly. The Curry iron mine, on the Menominee range, has been sold, conditionally, to John Outhwaite, of Cleveland, Ohio, for a consideration of \$38,000.

A party of Swedes, 30 in number, have arrived at Vulcan, Lake Superior, direct from Sweden. They are now doing service at the various mines thereabouts.

PRECIOUS METALS.

The gold fields of the Bingham mining district, Utah, are said to be full of promise. The Salt Lake Tribune says: There are large bodies of ore in this district, averaging from \$1800 to \$2500 to the ton in gold and silver, in the proportion say of three-fifths gold to two-fifths silver in value. The ore is honeycombed and easily crushed. The presumption that the accumulating tailings in Bingham could be utilized with good profits by proper machinery and improved processes is warranted. What is wanted is capital to develop the mines.

According to a dispatch from St. Louis, dated the 24th ult., Missouri possesses silver as well as iron, lead, &c. The dispatch says: A car-load of silver ore was shipped from Fredericktown, Madison County, this State, yesterday, to be reduced at the smelting works in this city. The ore was taken from the mine at Silver Mountain, eight miles from Fredericktown, owned by parties of this city, who opened it a short time since, and have now struck a fine ore yielding 80 ounces to the ton. A good deal of excitement exists in Madison County and spurs of the Ozark Mountains, and that section is being vigorously prospected. The mine is the true fissure of the vein, and promises a large and rich yield.

The bullion output of Leadville is about five car loads per day.

It is claimed that there are 85 producing mines in Leadville.

The Red Bird Gold and Silver Mining Company has a property that is attracting considerable attention. It is located in the heart of Eureka district in Nevada, in close proximity to the Eureka Consolidated, Richmond, Bald Eagle, Dunderberg, Atlas and Jackson. Mr. William P. Blake, the well-known mining engineer, reports on the ore taken from this mine, that it "is a soft and earthy mixture of oxide of lead, carbonate

of lead, and of oxide of iron enriched with silver, and particularly with gold, which constitutes its chief value." The company is offered by responsible Eastern business men, the office being in charge of George H. Clowers, of Waterbury, Conn.

Still another silver mine has been opened in Maine, this time in the town of Corinna. The first assay on the surface ore showed \$9, gold, 37 ounces of silver, lead and copper per ton. The last assay made since sinking shafts to the depth of 11 feet shows \$10, gold, and 68 ounces of silver, besides copper and lead. Parties are prospecting in this vicinity with good success.

The Durango Iron and Steel Manufacturing and Mining Company has been incorporated with a capital of \$10,000,000, and with the following directors: S. D. Simmons, P. B. Jumlan, E. M. Miles, James Brodie, William Curry, John Mason. The company has four claims, 200 by 400 meters, joining each other, in the Cerro del Merago, the famous iron mountain of Durango, Mexico, which is estimated to contain above its base more than 125,000,000 tons of almost pure iron.

There have been received recently at Baltimore, Md., 1700 tons of iron ore from the Island of Elba, and 1800 tons from Algiers, Africa.

The "little Detective."

A \$10 SCALE FOR \$3.

Perfect as any Letter Scale.

THOUSANDS SOLD BY DEALERS.



Weights from 1/4 oz. to 25 lbs.

This little scale is made with Steel Bearings and a Brass Beam, and will weigh accurately any package from 1/4 oz. to 25 lbs. It is intended to supply the great demand for a Housekeeper's Scale. Nothing of the kind ever having been sold before for less than \$8 to \$12. Every scale is perfect and will last a person's lifetime. Every family in City, Village or Country will have one. It is also a valuable scale in every office, for weighing mail matter, as well as a convenient scale for any store. It is warranted as perfect as any Letter Scale.

Same Scale with Tin Scoop and Balance Weight, 50 cents extra; Brass Scoop, 75 cents extra.

Two-ton Wagon Scales, \$40; Four-ton, \$60.

All other kinds at a great reduction.

Special prices to dealers, who find ours the best-selling Scales in the market. Address,

CHICAGO SCALE CO., Chicago, Ill.

10,000 Sold the First Year.

THE BEST ADJUSTABLE BAG HOLDER

In the World.

PRICE ONLY \$1.50.

Sent free on receipt of the price anywhere in the United States.

It is made of iron, will fit any sack, wide or narrow, and will last a lifetime. Just the thing for the Hardware trade and agricultural implement dealers. A large discount to the trade and agents. Your orders respectfully solicited. Agents wanted for this best selling article in the market.

Address,

L. JEFF. SPRENGLE,

Sole Manufacturer,

Ashland, Ohio.

Who would do without it for \$1.50.

The platform does not go with the holder; it is extra if wanted.

THE ASHLAND PATENT SACK HOLDER

PRICE \$1.50

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THE STAR SALT CASTER CO.,

Office, No. 161 FRANKLIN ST., BOSTON.

Manufacturers of Specialties in House Furnishing Hardware. PATENT EXTENSION DOOR KNOBS

(Pat. Jan. 29, 1878)

manufactured in every variety of style. Silver-Glass, Silver-Center, Fine Cut, &c. Fitted with heavy silver-plated mountings. Extend from 1 to 3 inches. They can be adjusted to doors of any thickness without the annoyance of the old-fashioned washers and pins. Our "Patent Chamber" (Pat. Nov. 6, 1877) prevents all possibility of the bursting of the glass bulbs.

A trial will make plain their merits. Send for illustrated price lists and circulars.

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There have been received recently at Baltimore, Md., 1700 tons of iron ore from the Island of Elba, and 1800 tons from Algiers, Africa.

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Lehman John, 30 Monroe, N. Y.	25
McNab & Hudson Mfg. Co., Watford, N. Y.	25
HYDRAULIC JACKS.	
Dudgeon Richard, 24 Columbia, N. Y.	25
Hyron E. & Co., 420 Grand, N. Y.	25
ICE CREAM FREEZERS.	
White Mountain Freezer Co., Leconia, N. H.	39
INSURANCE, BOLLER.	
Hartford Steam Boiler Inspection & Insurance Co.	34
IRON BROKERS.	
Boynton Geo. A., 70 Wall, N. Y.	4
Eding Edward J., Philadelphia, Pa.	4
Harty G. F., Pittsburg, Pa.	4
IRON, CHARCOAL, WARM OR COLD BLAST.	
Quincy John W., 25 William, N. Y.	4
IRON, COMMUNION, MERCHANTS.	
Bayley J. F. & Co., 25 Wall, N. Y.	5
Low S. B., Chattanooga, Tenn.	5
Richardson J. O., 23 Deck, Philadelphia.	5
Wier L. & R., 321 Walnut, Phila.	5
IRON, PIPE, IMPORTERS OF.	
Williamson James & Co., 59 Wall, N. Y.	4
IRON DEALERS.	
Abel Brothers, 120 South, N. Y.	4
Bonnot, Botsford & Co., Youngstown, O.	4
Borden & Lovell, 70 and 71 West, N. Y.	4
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Conney Daniel F., 25 Washington, N. Y.	4
Harrison & Gillson, 65 to 66 Water, N. Y.	4
Hoffman W. C., 25 Chambers, N. Y.	4
Judson B. F., 457 and 459 Water, N. Y.	4
Kane C., Pittsburg, Pa.	4
Lundberg Gustaf, 35 Eddy, Boston, Mass.	4
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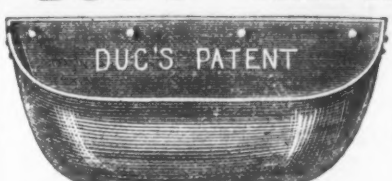
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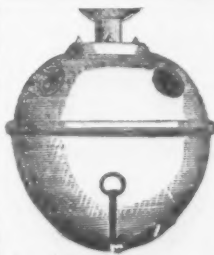
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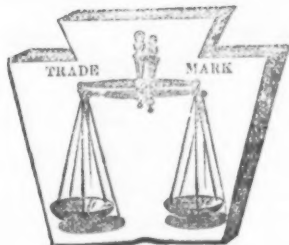


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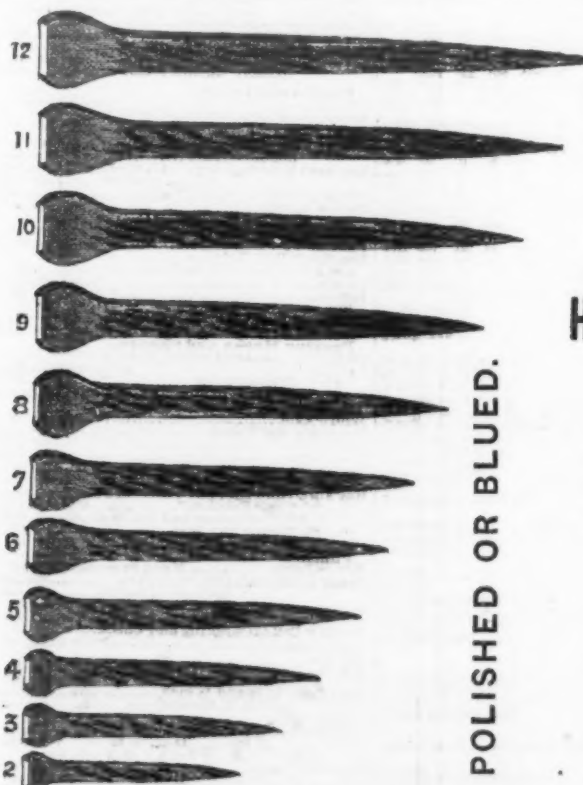
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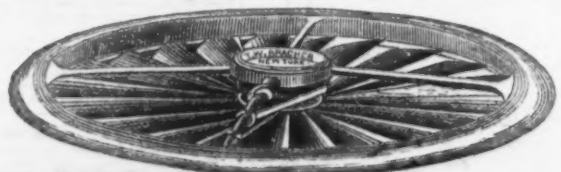
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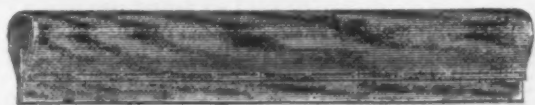
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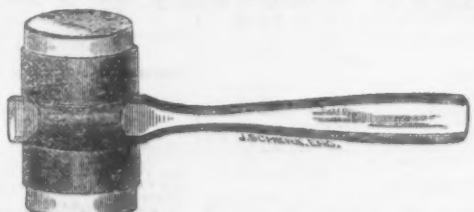
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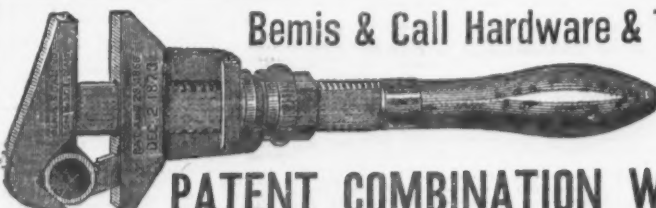
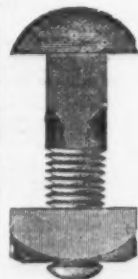
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15 x 22 to 30 x 36.....	11.25	10.50	9.00	8.75
15 x 36 to 24 x 36.....	12.75	11.50	10.00	9.75
20 x 28 to 34 x 36.....	13.50	12.25	11.25	11.00
20 x 36 to 24 x 42.....	14.75	13.75	11.75	11.50
20 x 42 to 30 x 54.....	15.25	14.00	13.00	12.75
24 x 42 to 34 x 54.....	17.25	16.00	15.00	14.75
34 x 42 to 34 x 60.....	19.75	18.50	17.50	17.25
30 x 50 to 40 x 60.....	21.00	19.50	18.50	18.25

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SIZES.	1st.	2d.	3d.	4th.
0 x 8 to 10 x 15.....	\$12.00	\$11.00	\$10.00	\$ 9.75
11 x 14 to 15 x 24.....	14.75	13.75	12.75	11.75
15 x 22 to 30 x 36.....	19.00	17.75	16.00	15.75
15 x 36 to 24 x 36.....	21.00	19.25	16.50	16.25
20 x 28 to 34 x 36.....	23.00	20.75	18.25	18.00
20 x 36 to 24 x 42.....	25.00	22.00	19.25	19.00
20 x 42 to 30 x 54.....	27.00	24.00	21.25	21.00
24 x 42 to 34 x 54.....	28.00	25.00	22.25	22.00
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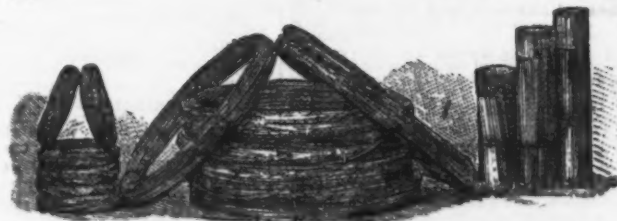
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Testimonial of D. J. Jones, Roll Turner, Cleveland Rolling Mill Co.

"I have been testing the steel on chilled iron rolls along with the best English and American steels,
and find it superior to any of them in every respect."
Samples furnished for trial. Quality guaranteed equal to any.

No. 13 Detroit Street, Cleveland, Ohio.

Steel.

R. MUSHET'S
Special Steel

FOR

LATHES, PLANERS, &c.

Turns out at least double work by increased speed
and so, and cuts harder metals than any other
steel. Neither hardening nor tempering required.

Sole Makers,

SAMUEL OSBORN & CO.,
Sheffield, England.

Represented in the United States by

RANDALL & JONES,
10 Oliver Street, BOSTON.

STEELINE.



Used for refining and temper-
ing all kinds of Steel Tools.
Increases their durability at
least fivefold.

Secures absolute safety from
cracking.

Send for circular to

BAUER & CO.,

96 Greenwich Ave., N. Y.

Emery, Grindstones, &c.

Walter R. Wood,
GRINDSTONES.

Berea, O., Nova Scotia, & other brands
283 and 285 Front Street, New York.

WORTHINGTON & SONS.

North Amherst, Ohio.

Manufacturers of

Lake Huron Amherst
and Berea

GRINDSTONES.

BOYD & CHASE,

The largest manufacturers in the world of

OIL STONE

Of all descriptions.

107th Street and Harlem River,
Send for Illustrated Price List. NEW YORK

H. S. WOOD & CO.,

Manufacturers of Importers of

Berea, O., Newcastle, Eng.,
Buck River, O., Wickesley, Eng.,
Lake Huron, Mich., Nova Scotia,

GRINDSTONES,

33 West and 58 Washington Sts., N. Y.

S. H. JENNINGS, 230 Front St., New York.

Importers of and Sole
Agent in the United States for JENNINGS'S
ROYAL MILLS LONDON EMERY. Prices Low.

Please write for information and prices.

Gunpowder.

GUNPOWDER.

DUPONT'S

Rifle, Sporting and Blasting Powder

The most popular Powder in use.

Dupont's Gunpowder Mills, established
in 1801, have maintained their great reputation
for 78 years. Manufacture the following cele-
brated brands of Powder:

DUPONT'S DIAMOND GRAIN,
Nos. 1 (coarse) to 4 (fine), unequalled in strength, quick-
ness and cleanliness; adapted for Glass Ball and
Pigeon Shooting.

DUPONT'S EAGLE DUCKING,
Nos. 1 (coarse) to 3 (fine), burning slowly, strong and
clean; great penetration; adapted for Glass Ball,
Pigeon, Duck and other shooting.

DUPONT'S EAGLE RIFLE,

A quick, strong, clean Powder of very fine grain for
Pistol shooting.

DUPONT'S RIFLE, Fg. "Sea Shooting,"

FFg and FFFg.—The Fg for long range rifle shoot-
ing, the FFg and FFFg for general use, burning
strong and moist.

Also all kinds of Sporting, Mining, Shipping and
Hunting Powders of all sizes and descriptions. Special
grades for export. Also, Musket, Cannon, Mortar
and Mammoth Powder. U. S. Government standard.
Powder manufactured to order of any required grain
or proof. Agencies in all cities and principal towns
throughout the U. S. Represented by

F. L. KNEELAND, 70 Wall St., N. Y.

N. B.—Use none but Dupont's Fg or FFg Powder
for long-range rifle shooting.

CUN POWDER.

Laflin & Rand Powder Co.

No. 26 Murray Street, New York.
Manufacture and sell the following celebrated brands
of Sporting Powder known everywhere as

ORANGE LIGHTNING,

ORANGE DUCKING,

ORANGE RIFLE

more popular than any Powder now in use.

Blasting Powder and Electrical Blasting

Apparatus.

Military Powder on hand and made to order.

SAFETY FUSE, FRICIONAL & PLATINUM

FUSES.

Pamphlets showing sizes of grain sent free.

Steel.
THE EDGAR THOMSON STEEL CO.,
LIMITED.
MANUFACTURERS OF



General Office and Works at Bessemer Station (Penn. R. R.), Allegheny County, Pa.
New York Office, 57 Broadway.

The members of the Edgar Thomson Steel Company, Limited, have had large experience in manufacturing and in railway management; their works are the most complete in the world, with all the late improvements, and are located in the best Bessemer metal district in the United States, and their managing officers are experienced in the manufacture of Bessemer Steel.
The Company warrants its rails equal in quality to any manufactured in the United States.
Rails of any weight or section furnished on short notice. Orders for trial lots solicited.

Branch Office and P. O. Address, **No. 48 Fifth Ave., Pittsburgh, Pa.**
D. McCANDLESS, Chairman. **WM. P. SHINN,** General Manager.

JOHN WILSON'S CELEBRATED



BUTCHERS' KNIVES,
BUTCHERS' STEELS,
AND
SHOE KNIVES.

THE TRADE MARK, IN ADDITION
TO THE NAME,
IS STAMPED UPON EVERY ARTICLE MANUFACTURED BY
JOHN WILSON.

GRANTED A.D. 1768, BY THE
INCORPORATION OF CUTLERS OF SHEFFIELD,
AND PROTECTED BY ACT OF PARLIAMENT.
WORKS:--SYCAMORE STREET, SHEFFIELD. ESTABLISHED in the Year 1750

North Chicago Rolling Mill Co.

ESTABLISHED 1857. CAPITAL, \$3,000,000. INCORPORATED 1869.
Works at Chicago, Ill., and Milwaukee, Wis.

MANUFACTURERS OF
MERCHANT BAR, FISH PLATES, PIG METAL,
IRON RAILS & BESSEMER STEEL RAILS.

Capacity of Works:	
Fish Plates.....	20,000 tons
Merchant Bar.....	40,000 "
Pig Metal.....	80,000 "
Iron Rails.....	80,000 "
Steel Rails.....	50,000 "
Total Capacity per year.....	280,000 "

OFFICES:
17 Metropolitan Block, Chicago, Ill.
37 Mitchell Block, Milwaukee, Wis.
O. W. POTTER, President, CHICAGO.
S. P. BURT, Vice-President, NEW BEDFORD.
S. CLEMENT, Treasurer, MILWAUKEE.
R. C. HANNAH, Secretary, CHICAGO.

HERMANN BOKER & CO.,
101 and 103 Duane Street, New York,

PROPRIETORS OF **TRENTON** VISE & TOOL WORKS
PICKS, MATTOCKS, CRUB HOES, HAMMERS.



Sole Agents for
H. Boker & Co.'s Celebrated "Tree" Brand Cutlery.
R. Heinisch's Sons Unrivaled Shears, Trimmers, Scissors, Japanned and Nickled.
Ward & Payne's Sheep Shears.
Peugeot Brothers' Horse Clippers.

J. W. GARDNER'S
Unequaled and "Warranted Superior to All"
TABLE CUTLERY,

Pocket Knives and Barlows.
Also a full stock of

Geo. Wostenholm & Sons', W. & S. Butcher's,
Manhattan and O. K.

POCKET CUTLERY & RAZORS. **Arms and Ammunition.**

Philadelphia Smelting Co.,
S. E. Cor. Twelfth and Noble Sts., PHILADELPHIA.

GENUINE BABBITT,
Guaranteed at a speed of 10,000 a minute, and at any pressure for 10 years.
ALL GRADES OF ANTI-FRICTION METALS.
DEOXIDIZED BRONZE,

Superior to Phosphor Bronze or any other alloy of Copper and Tin for Machinery Journals.
Solders, Stereotype Metal, Gas and Steam Fittings and Fixtures, Brass and Composition Castings.
Send for circulars.

WIRE NAILS

French Points, Window Shade Nails,
Upholstering, **WAGON NAILS,** Molding Nails
(Sample Cards sent on application.)
Electrotype, Roofing Nails,
Barbed Caster Nails.

Vener Nails, Label Tacks and small Nails of all kinds, Cabinet Nails, Barbed Lock Nails, Cigar Box Nails, &c., &c., put up in bulk, 5 lb. packages 1 lb. papers, or as wanted.

AMERICAN WIRE NAIL CO.
Factory, Fifteenth and Madison Sts. COVINGTON, KY.

ESTABLISHED IN 1859.



PUBLISHED EVERY SATURDAY.

THE OLDEST AND CHIEF REPRESENTATIVE OF THE IRON, HARDWARE AND METAL TRADES.

OFFICE: 44a CANNON STREET, LONDON, E. C.

ADVERTISEMENTS AND SUBSCRIPTIONS ARE RECEIVED AT THE VARIOUS OFFICES OF "THE IRON AGE," NAMELY

NEW YORK OFFICE: DAVID WILLIAMS, Publisher of *The Iron Age*, 83 Reade street.

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SPECIAL FEATURES.

Notes of Novelties.—This is a department of the journal always watched with interest by the trade, as it contains an account, from week to week, of the novelties which manufacturers and inventors are introducing to the notice of the trade. These articles are freely illustrated.
Special Correspondents.—The *Ironmonger* has a deserved reputation for its special correspondence from all the principal Continental, British and manufacturing centers. The writers are gentlemen holding important positions in the districts with which they are connected, and possess facilities for acquiring information specially suited for the columns of the *Ironmonger*. *The Week, Legal News, Trade Notes, Bankruptcies, Foreign Notes, Colonial Settings, Merchants' Circulars, Imports and Exports, &c.*, are each departments of the journal, containing a digest of all matters of direct interest to the Iron, Hardware and Metal Trades. In addition to the above, there is a carefully classified list of Patents, together with Editorial Notes, French, Belgian and other Special Correspondence.

SUBSCRIPTIONS

to the *Ironmonger and Metal Trades Advertiser*, with which is sent every fourth week the Foreign Supplement (see below), may commence from any date, but are not received for less than a year complete. The rate is \$5 per annum, inclusive of postage to any part of the world outside Great Britain. To every subscriber is presented, free, in the course of his year, a handsome and useful *Ironmongers' Diary and Text Book*, a work sold to non-subscribers at 75 cents.

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In April and October of each year there is published a Special Issue, the circulation of which is not less than **Twelve Thousand (12,000) copies.**

THE IRONMONGERS' DIARY AND TEXT BOOK.

This is an annual presented free to every Subscriber to the *IRONMONGER AND METAL TRADES ADVERTISER*. It contains a large number of ruled skeleton pages for diary and other entries, and in addition much valuable reference information, varied from year to year. It is handsomely bound in cloth, gilt; and as copies are used in thousands of establishments for a whole year, it is obviously a medium of exceptional value for advertisements. Sold to non-subscribers at 75 cents.

THE FOREIGN SUPPLEMENT

Is published every fourth week in connection with the extensive and world-wide circulation of the *Ironmonger* itself. The dates of its publication in 1879 will be as follows:
JANUARY 11, FEBRUARY 8, MARCH 8, APRIL 5, MAY 3 and 31, JUNE 28, JULY 26, AUGUST 23, SEPTEMBER 20, OCTOBER 18, NOVEMBER 15, DECEMBER 13.

This Supplement is published in

FIVE LEADING COMMERCIAL LANGUAGES

of the world, including English, and is sent to all the countries where they are spoken, thus placing the contents of the *Ironmonger* not only within reach of the native language of eighty millions of German, forty-two millions of French, twenty-eight millions of Italian, and fifty-one millions of Spanish speaking people; or, in all, over two hundred millions of inhabitants in the principal nations where the best purchasers of manufactured goods are to be found.

Advertisements are inserted in any language at the following

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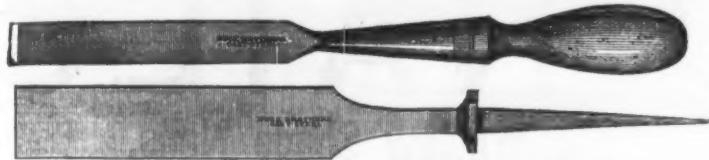
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Advertisers will do well to use illustrations freely. Where economy of space is an object, a left page illustrated and described, in one language, can be suitably described in four or more languages on the opposite or right page without illustrating.

THE WHOLE FOREIGN HARDWARE TRADE,

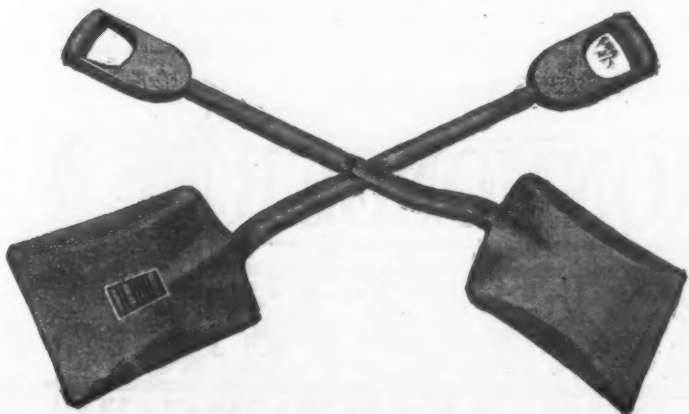
so far as our experience of twenty years is concerned, will be covered by *THE FOREIGN SUPPLEMENT* at least twice a year. Thus a Price List or Advertisement inserted in the *Ironmonger and Foreign Supplement* is a strikingly powerful and most efficient way of publicity, not to be compared with any of the other ordinary channels of communication.



BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of
Shank, Socket Firmer and Socket Framing Chisels,
PLANE IRONS.
Gouges of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awls
Chisel Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.

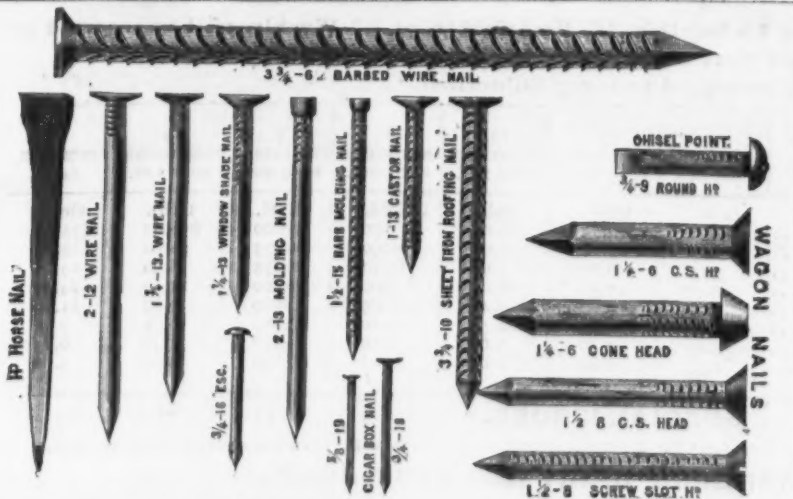
HUSSEY, BINNS & CO.,



PITTSBURGH.
SHOVELS,
SPADES and
SCOOPS.



NEW sizes Patent Malleable Iron Castings,
Nos. 2 and 3.
pattern Heavy Screw Clamps;
strongest in the market.
Send for Price List.
Malleable Iron Castings
Of superior quality, and Hardware Specialties in
Malleable Iron made to order.
HAMMER & CO., Branford, Conn.



HORSE SHOE & WIRE NAILS

Steel, Iron and Brass Nails and Barbed Nails

Of every kind.
Roofing and Moulding Nails, Escutcheon Pins, Chair and Caster Nails, Cigar
Box and Window Shade Nails, Wagon and Boat Nails.

Manufactured by

THE HP NAIL COMPANY,

Cleveland, Ohio.

**NORTHWESTERN
HORSE NAIL CO.**

ESTABLISHED IN 1869

Hammered & Finished Horse Nails.

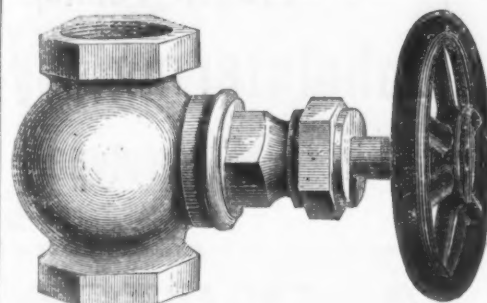
We offer our Finished Nail to the trade with the confidence that it has no equal
in the market. It is the genuine "Northwestern" Nail, Finished, and we give it
our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 113 Chambers Street, New York, carry a full
line of our goods, and will be pleased to serve you at Factory prices.

McNab & Harlin Mfg. Co.,
MANUFACTURERS OF
BRASS COCKS AND VALVES,



For STEAM,
WATER
and GAS.

Iron Pipe and Fittings.
PLUMBERS' MATERIALS

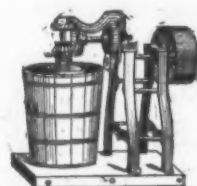
New Illustrated Catalogue and Price
List sent by express to the Trade on ap-
plication.

Factory, Paterson, N. J.

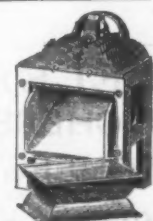
56 John Street, N. Y.



HAND FREEZER.
2 to 25 qts.
\$3.50 to \$25.00



HAND OR POWER.
25 and 50 qts.
\$75.00 and \$175.00



**HAND OR POWER
ICE CRUSHER.**
\$75.00

SANDS' TRIPLE MOTION WHITE MOUNTAIN ICE CREAM FREEZERS.
Galvanized iron outside, tin inside. No secretions of oxide of zinc need be feared in the use of this freezer.
Simple in construction, perfect in results. Send for descriptive circular and discounts of this celebrated
Freezer. Address **WHITE MOUNTAIN FREEZER CO., Laconia, N. H.**

COULTER, FLAGLER & CO.,

87 Chambers and 69 Reade Sts., New York,

**Hardware Manufacturers'
Warehouse.**

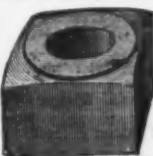


Office and Warehouse of Union Hardware Co.; Rugg Mfg. Co., Draw Knives, Chisels, &c.; Dense Bros., Bits,
Corkscrews, &c.; Richardson Bros., Saws of all kinds; Brooks Edge Tool Co.'s Axes, Hatchets, &c.; M. Price,
Hatchets, &c.; J. & W. Rothery, Extra Hand Cut Files; L. D. Frost, Carriage Bolts, Refined and Norway Iron;
Cowles Hardware Co., Screwdrivers, Mining Knives, &c.; Rider, Wooster & Co., Anti-Friction Barn Door
Hangers, &c.; H. B. Hawley, Shears of all kinds; Walden Knife Co., Pocket Cutlery; American Screws; N. Y.
Anti-Friction Metal Co.'s Babbitt Metals; Howard, Razor Strops; C. Forchner, Spring Balances; F. Lowen-
traut & Co., Dividers, Callipers, &c.; Shepard Hardware Co., Finiers, Blind Hinges, &c.; Saxton & Amedon,
Braces, all kinds; Bevia Bros. Mfg. Co., Belts, all kinds; B. H. Parsons & Bro., Pliers, Nippers, &c.; C. L.
Griswold, Cast Steel Bits; Lancaster Lock Works, Jail Locks.

STANDARD NUT CO.,

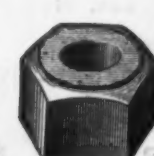
Pittsburgh, Pa.,

MANUFACTURERS OF



HOT PRESSED

Square & Hexagon Nuts,



R. R. FISH BARS,

BOLTS,

SPIKES,

RIVETS, &c.



LIGHTNING HAY KNIVES,

WEYMOUTH'S PATENT.



This knife is the best in use for cutting down hay and straw in mow and
stack, cutting fine feed from bale, cutting corn stalks for feed, cutting
peat and ditching marches.

The blade is best cast steel, spring temper, easily sharpened, and is giv-
ing universal satisfaction. A few moments' trial will show its merits, and
parties once using it are unwilling to do without it. Its sales are fast in-
creasing for export as well as home trade, and it seems destined to take the
place of all other Hay Knives.

They are nicely packed in boxes, one dozen each, of 50 lbs. weight, suit-
able for shipping by land or water to any part of the world.

Manufactured only by

HIRAM HOLT & CO.,

East Wilton, Franklin Co., Maine.

For sale by the Hardware Trade generally.

Dearborn's Pat. Adjustable Blind Awning Fixtures.



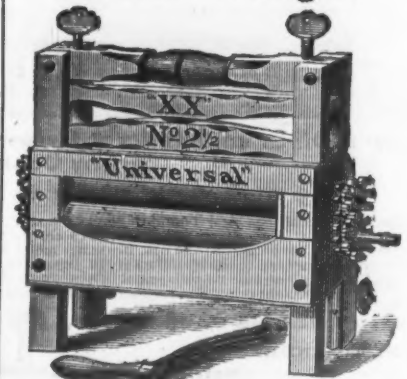
Either old or new Blinds thus fitted can
be opened in the usual way or used as an
awning at pleasure.

For particulars address the sole manufac-
turers,

BOSTON BLOWER CO.,

Boston, Mass.

THE "OLD RELIABLE"
UNIVERSAL
Clothes Wringer.



Improved with Rowell's Double Cog-Wheels on
both ends of each roll.

Over 500,000 sold!

And now in use, giving "Universal" satisfaction

EVERY WRINGER WARRANTED.

Be sure and inquire for the "Universal."

Sold by the Principal Jobbers in Hard-
ware and House-Furnishing Goods
everywhere.

Special rates given for export.

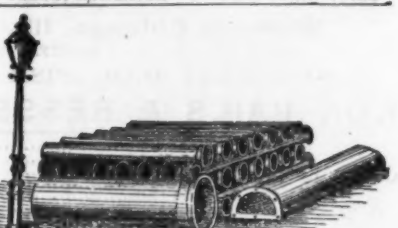
Metropolitan Washing Machine Co.

32 Cortlandt St., New York.

WM. S. CARR & CO.

Sole Manufac-
turers of
CARR'S
PATENT
Water
Closets,
PUMPS, CABINET WOOD WORK, &c.

106, 108 & 110 Centre Street,
Factory, Mott Haven. NEW YORK.



R. D. WOOD & CO.

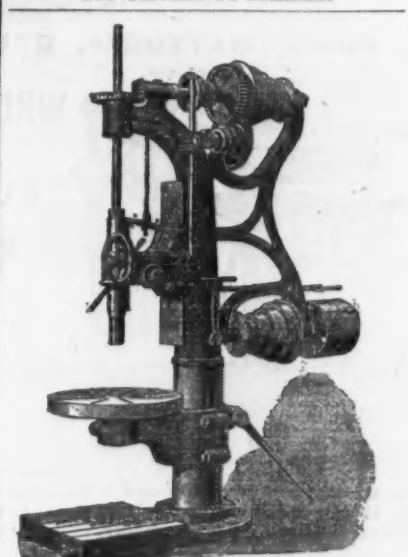
Philadelphia,

Manufacturers of

Cast Iron Pipe

FOR WATER AND GAS.

Lamp Posts, Valves, &c.,
Mathew's Pat. Anti-Freezing Hydrants.
400 CHESTNUT STREET.



MACHINISTS' TOOLS,

BEST AND CHEAPEST.

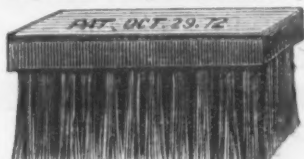
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WILLIAM COOKE,

6 Cortlandt St., NEW YORK CITY.

FARLEY'S PATENT
Rubber-Cushioned Casting Brush.

Superior to any in the Market.



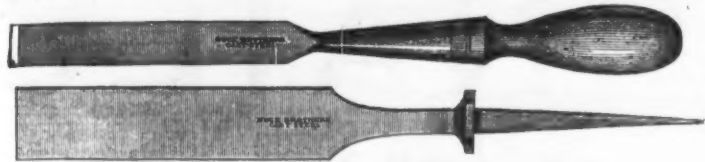
Manufactured and for sale in the
L. B. FLANDERS MACHINE WORKS,
1025 Hamilton St., Philadelphia
Descriptive Circular on application.

VERMONT SNATH CO.,

Manufacturers of

Pat. Swing Socket Snaths

and also a large variety of other styles of Snaths.
Springfield, Vermont.



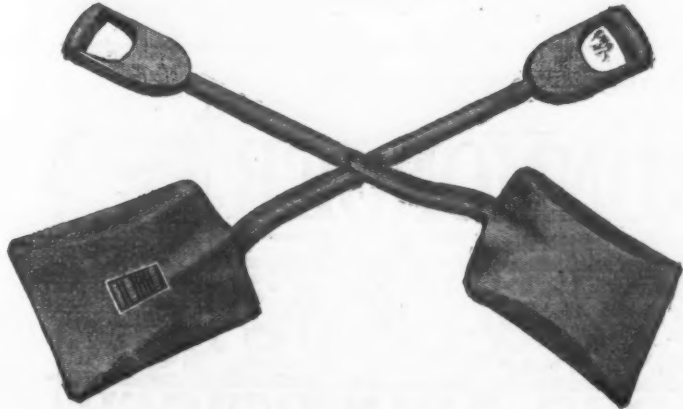
BUCK BROTHERS, Millbury, Mass.

The most complete assortment in the U. S. of

Shank, Socket Firmer and Socket Framing Chisels,
PLANE IRONS.

Gouges of all lengths and circles beveled inside or outside. Nail Sets, Scratch and Belt Awns
Chisel Handles of all kinds. Carving Tools. Also small Boxes of tools of best quality.

HUSSEY, BINNS & CO.,



PITTSBURGH.

**SHOVELS,
SPADES and
SCOOPS.**



No. 1.

**NEW
NEW**

sizes Patent Malleable Iron Oilers,
Nos. 2 and 3.
pattern Heavy Screw Clamps;
strongest in the market.

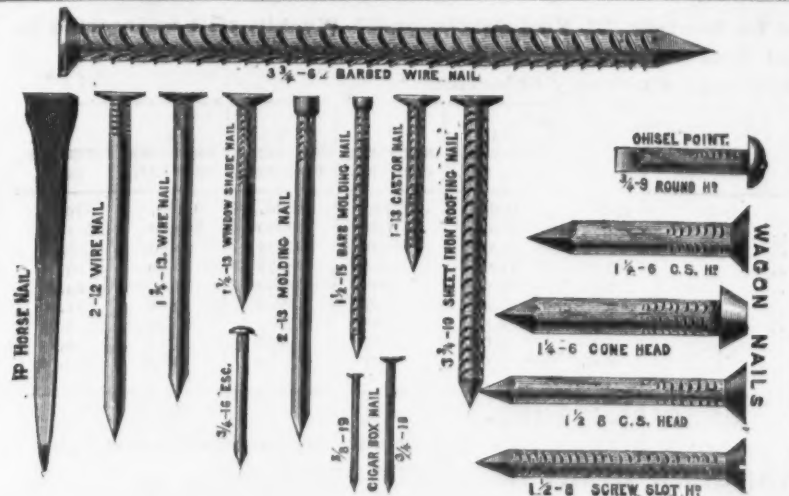
Send for Price List.

Malleable Iron Castings

Of superior quality, and Hardware Specialties in
Malleable Iron made to order.

HAMMER & CO., Branford, Conn.

No. 2.



HORSE SHOE & WIRE NAILS

Steel, Iron and Brass Nails and Barbed Nails
Of every kind.

Roofing and Moulding Nails, Escutcheon Pins, Chair and Caster Nails, Cigar
Box and Window Shade Nails, Wagon and Boat Nails.

Manufactured by

THE HP NAIL COMPANY,

Cleveland, Ohio.

**NORTHWESTERN
HORSE NAIL CO.**

ESTABLISHED IN 1862

Hammered & Finished Horse Nails.

We offer our Finished Nail to the trade with the confidence that it has no equal
in the market. It is the genuine "Northwestern" Nail, Finished, and we give it
our unqualified guaranty.

Office and Factory, 56 to 68 Van Buren St., Chicago.

A. W. KINGSLAND, Secretary.

Our agents, Graham & Haines, 113 Chambers Street, New York, carry a full
line of our goods, and will be pleased to serve you at Factory prices.

McNab & Harlin Mfg. Co.,

MANUFACTURERS OF

BRASS COCKS AND VALVES,

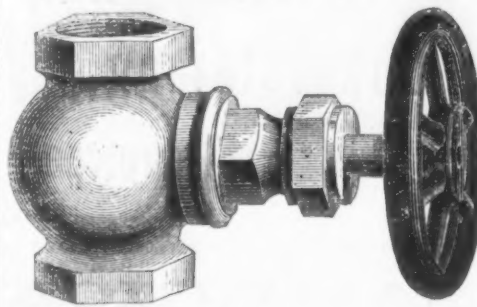
For STEAM,
WATER

and GAS.

Iron Pipe and Fittings.

PLUMBERS' MATERIALS

New Illustrated Catalogue and Price
List sent by express to the Trade on ap-
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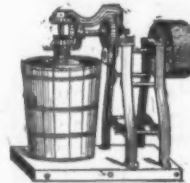


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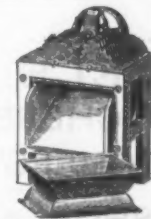
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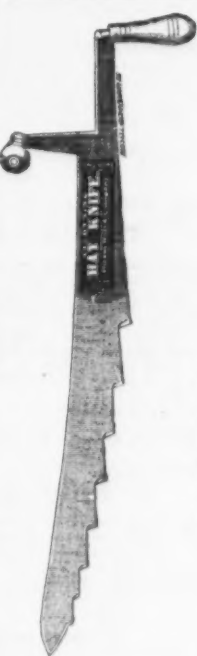
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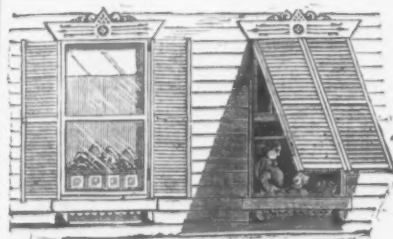
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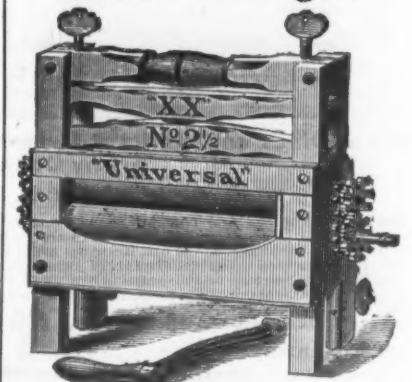
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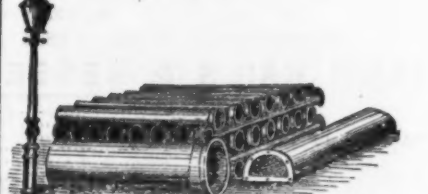
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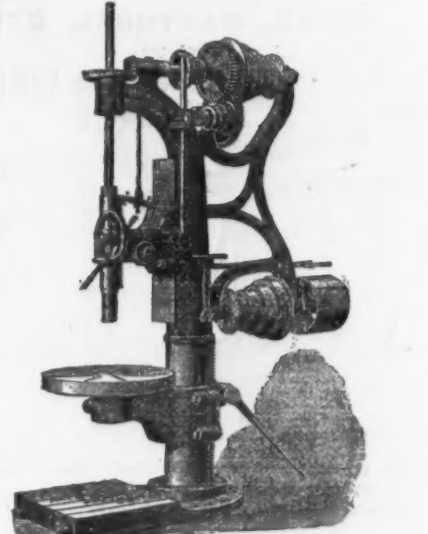
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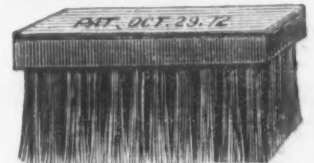
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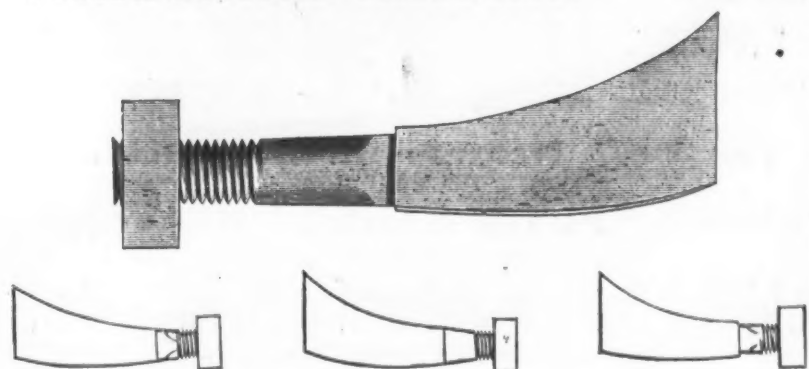
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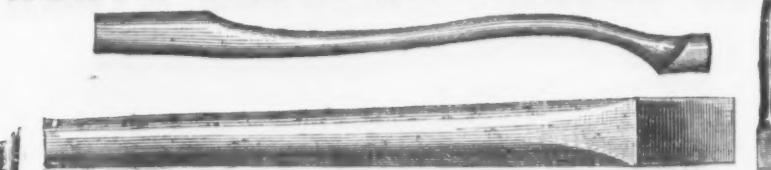
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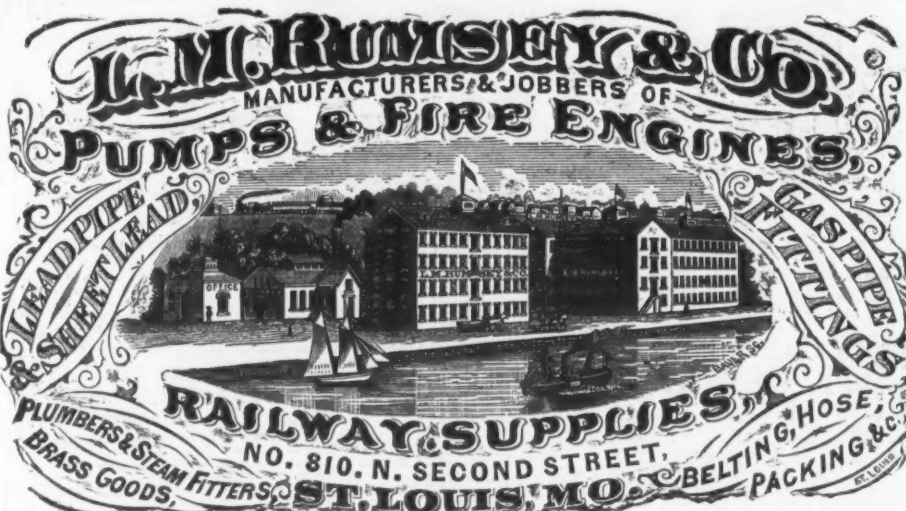
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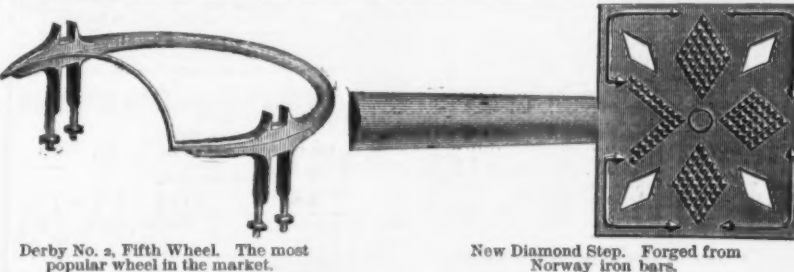
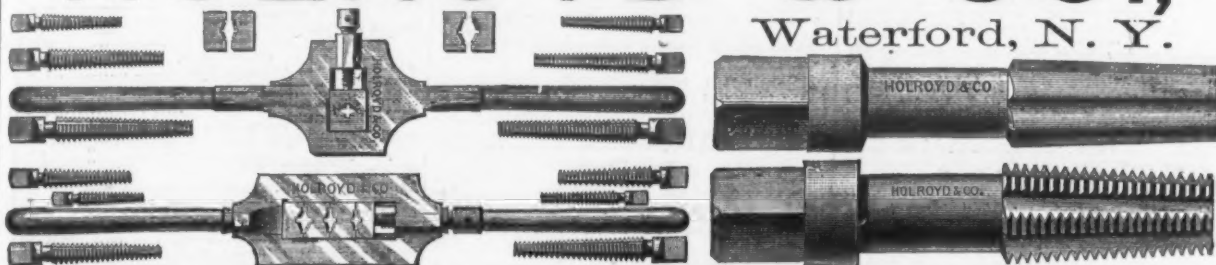
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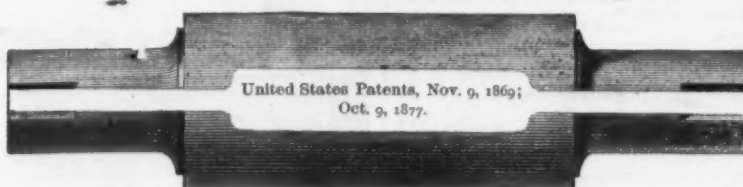
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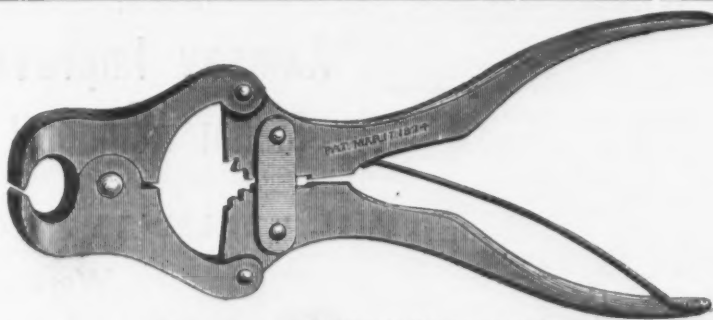


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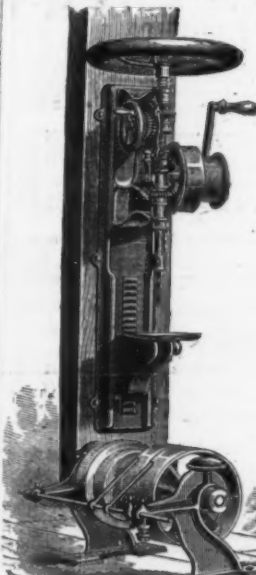
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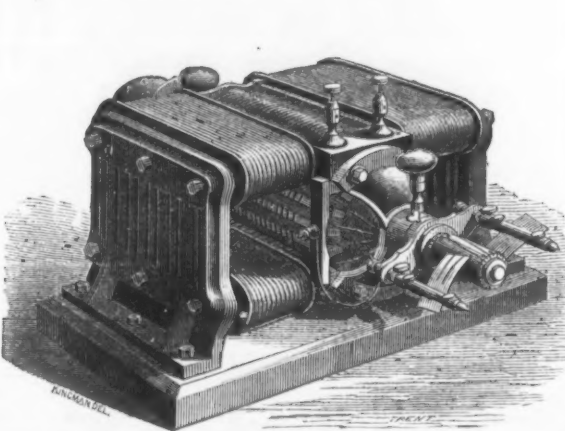
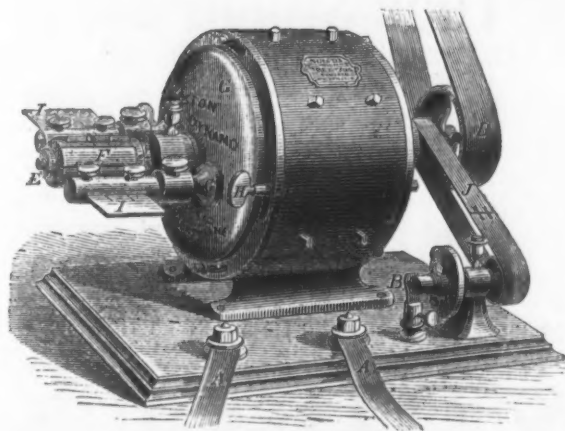
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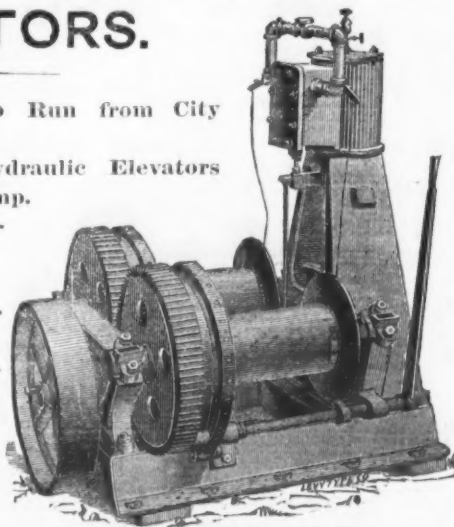
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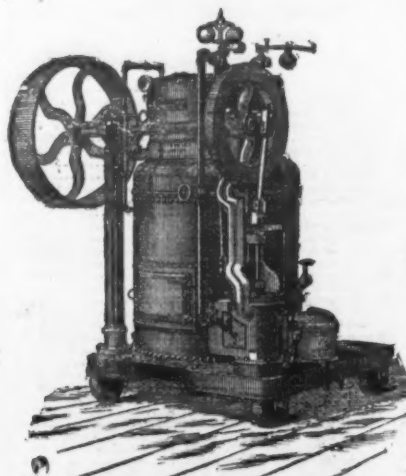
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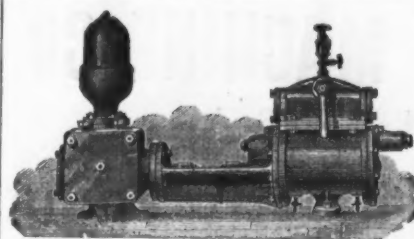


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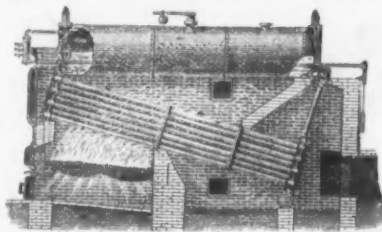
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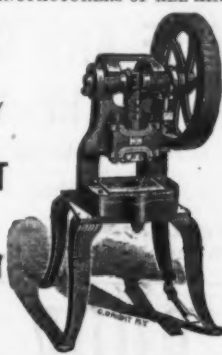


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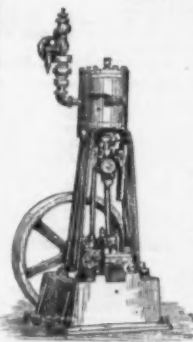
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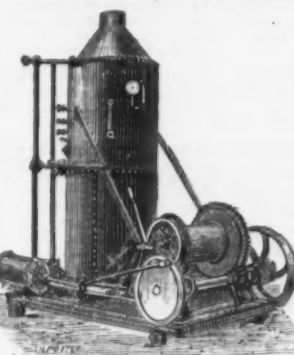
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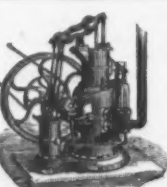


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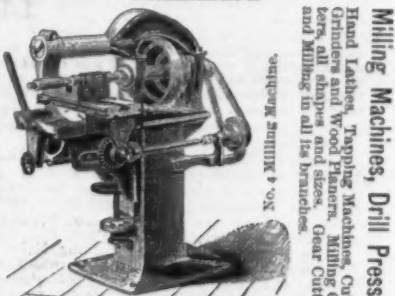
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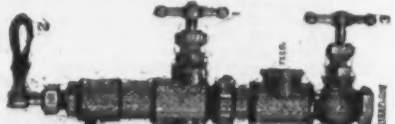
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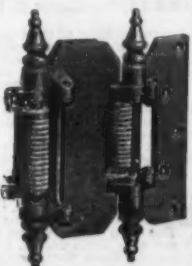
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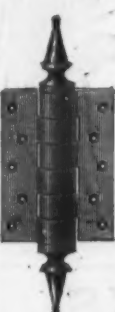
The Emperor Dom Pedro, accompanied by Director General Goshorn, Superintendent Albert, and others, visited Machinery Hall at the Centennial on the evening of June 28th. Among other things inspected, at the invitation of E. M. Boynton, of New York, they witnessed a trial of the New Lightning Saw, patented March 26, 1876. Two men, with one of these saws, cut off a sound log of gum-wood, one foot extreme diameter, in seven seconds, or at the rate of a cord of wood in five minutes. Messrs. Corlies, Morell, Lynch, and other members of the commission, witnessed the trial and timed the cutting. The Emperor remarked, "That was fast, very fast cutting." Last evening the Emperor made another examination of the saw.—Philadelphia Press, June 30.

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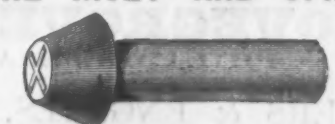
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withdrawn, and turned up lar slabs shown at has been the shaft is rounded 3 and the lar is rounded S S S, are afterward with, as a to assume Then mor as at 8 S crank is foreman body of th collar, on shown at detached f completed, to carry i cuts the ga rounds up This, it w and would not attende it is very b forging, fo that not a can be thus ack N wou